Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Sound Waves, Telephone Magazine and The Telephone

Vol. XVII **CHICAGO, SATURDAY, MAY 1, 1909** **No. 18**

PUBLISHED EVERY SATURDAY BY THE

Telephony Publishing Company

Monadnock Block, Chicago

Telephone Harrison 2951

H. B. McMeal, President — F. S. Kenfield, 1st Vice-President
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Edited by H. B. McMeal and Franklin H. Reed

The present publication comprises

Vol. 56	The Telephone	No. 18
Vol. 33	Telephone Magazine	No. 18
Vol. 19	American Telephone Journal	No. 18
Vol. 17	Sound Waves	No. 18
Vol. 17	Telephony	No. 18

TERMS OF SUBSCRIPTION:

United States, Cuba and Mexico.....per year, $3.00
Canada 4.00
Other Foreign Countries within the Postal Union..... 5.00

NOTICE TO ADVERTISERS

Changes of advertising copy should reach this office ten days in advance of date of issue. New advertisements accepted up to noon of Monday for the paper dated Saturday of the same week.

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Entered as second-class matter September 4, 1908, at the post office at Chicago, Ill., under act of March 3, 1879.

CHICAGO, SATURDAY, MAY 1, 1909.

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Attitude of Nebraska Commission Toward Preventing Discrimination to Meet Competition.

The Nebraska Railway Commission has disappointed the Independents in refusing to prevent discrimination between localities to meet competition. One of the purposes the Nebraska Independents hoped to accomplish by putting their business under the regulation of the railroad commission was the prevention of rate cutting between competing companies. In the case of H. F. Canon against the Nebraska Telephone Company, recently decided, the commission has held that a difference in toll rates may be made between localities where there is competition, and localities where there is monopoly. The decision is open to this evident criticism: If a company may charge a lower rate in a locality where there is competition, it may charge a higher rate in a locality where there is no competition. Thus, monopoly is a legal excuse for a higher rate, and the object of control by commission is defeated. No company should be allowed to charge a non-compensatory rate, simply to meet competition. Its rates in all localities of the same size and physical situation should be the same. The commission would not for an instant permit a difference in railroad rates between two localities situated an equal distance from a common point in the absence of different physical conditions. The commission failed to recognize that telephone toll service is comparable to railroad service. The decision of the commission seems directly contrary to sub-division "a" of Section 14 of the Railway Commission Act of Nebraska, which provides, "If any * * * common carrier * * * makes or gives any undue or unreasonable preference or advantage to any particular * * * locality * * *, the same shall constitute an unjust discrimination * * *."

In holding in the same decision that a difference in toll rates between subscribers and non-subscribers, made for the purpose of meeting competition, was not permissable, the Commission recognized the principle we set forth above and make their own decision inconsistent and illogical.

Complications of Government Ownership in Great Britain.

The British Postoffice is liable to meet a serious condition resulting from the perfectly defensible policy of the National Telephone Company, whose plant is to be transferred to the Government December 31, 1911. The telephone com-

pany, which is properly watchful of the interests of its stockholders, has made the rule that no new plant shall be installed which will not pay a dividend in the period previous to the expiration of its license. It is still problematical whether the necessity of obtaining proper returns on the most recent expenditures for plant will not compel a reduction, which will, to a certain degree, mitigate against the efficiency of the service and depreciate the character of the plant already built.

Good practice demands that engineering and construction shall be regularly carried on to provide for a period of many years ahead. Interruption of such work not only involves the liability of injuring the service at a future time, but is sure to add to the cost of all new work which follows a period of inactivity. Not only is this true on account of its effect on the physical condition of the plant, but from the fact that organizations which are suddenly built up to meet large demands are far less efficient than those composed of men who have been steadily employed and trained until they are familiar with their duties.

At the present time, much dissatisfaction is being expressed in England by trained telephone men who have been discharged as a result of this policy of discontinuing development. Serious as is this phase of the situation, still more important is the effect which this policy will have upon the public. Since Government ownership is determined for Great Britain, it would be extremely unfortunate should any lack of co-operation force the Government to undergo the inconvenience and possible humiliation which would arrive from the necessity of making up, after it takes control, the work which should have been regularly carried on up to the time of its assuming charge.

The Free Service Nuisance.

Talk against discrimination is common among all readers of our modern magazines and newspapers. Perhaps most of it springs from a mercenary impulse in the mind of the speaker. The average citizen believes that he would get certain articles of merchandise for less money, if the big producers were not given, through discriminatory agreements, certain means for keeping up prices. This average citizen usually is not guided by his conscience to give up the slight privileges he himself enjoys at the expense of his neighbors.

Telephone subscribers have for years been paying for the maintenance and operation of telephones used by non-subscribers. Free use of the telephone has been held out to "draw trade" by thousands of druggists, cigar store proprietors, saloon keepers, and other small business houses. As the number of subscribers has grown, and the familiarity with the convenience of telephone service has developed among the people of limited means, or thrift, the cost of handling the service from flat rate telephones thrown open to the public has come to be far greater than the income from these instruments. Of course, since the company must come out with a profit on its entire business, this burden is indirectly distributed among, and borne by all subscribers.

The issue is not big enough to make a campaign to impel each occasional talker to pay for the service he uses, a subject for a general appeal to public sentiment. The obviously practical course is to show the proprietors of the establishments which maintain telephones for the free use of the public that they are as great losers as the telephone company's other subscribers.

An investigation made by the Columbus Citizens Telephone Company during the past few weeks has been a logical preliminary movement in its project for weaning one class of its subscribers from this expensive practice. By showing, from actual counts, the number and length of conversations passing from these free telephones, the tradesman's attention was forcibly directed to a condition which he could check by casual observation—namely, the blocking of at least one of his wires to incoming traffic. The next step was to show that a dependable dealer could rely upon making direct sales on a large percentage of inquiries received by telephone.

A tradesman can well afford to take a nickel out of his pocket occasionally to pay for a call put in by a good customer. But telephone service is a costly advertisement if it obliges a store to close one of its avenues for incoming business in order to accommodate a steady stream of persons who come in to telephone, and stay to buy a stick of gum, or a cigar. Of course, the telephone companies, themselves, have been responsible for stimulating a belief in the value of the free telephone for advertising a store. Their task of convincing the proprietor that he can shift a too heavy burden to the individuals who receive the benefit is most easily accomplished by submitting a detailed proof of the whole price he pays for his telephone gifts.

The Large Waiting List a Weakness.

A few weeks ago we visited an Independent exchange where the management is using every legitimate device to get new subscribers. A large new plant, built with confidence in the city's ability to support a high grade Independent telephone system, had replaced old equipments. In order to make their investment in the telephone plant profitable on a permanent basis, the stockholders first provided the wires, and then started out to get the business to keep them occupied—and the business is coming in.

This policy is sharply contrasted with conditions at some other points which have come to our attention. A number of managers have, in some way, humbugged themselves into believing that the existence of a large waiting list is a substantial asset to the company and a credit to the management. There is just one condition which makes this true. If the company uses its waiting list as a guarantee of prompt return on new investment, and thus gets money to build, the waiting list is useful. But its value cannot be demonstrated until the waiting list has ceased to exist, by the transference of its names to the directory.

A waiting list means that the company has a chance to make money by investing money in equipment. It is the strongest kind of guarantee of expenditures. But the waiting list itself does not earn dividends—it makes dissatisfied applicants, who will finally go over to the other fellow, and stick to him.

Telephone Legislation*

By A. H. McMillan

Legal Editor of TELEPHONY.

The legislation affecting Michigan telephone interests that I shall discuss is of two kinds, accomplished and prospective. The accomplished legislation finds expression in our new constitution; the prospective is seeking for expression through a number of bills recently introduced into our legislature but not enacted into law.

CONSTITUTION.

The new constitution that went into effect January 1, 1909, contains several provisions which curtail the opportunities of telephone companies, and make less easy the development of their business. It is wise for us to become familiar with them, so we may know what new obstacles we are to meet.

In the constitution recently adopted, special charter provisions were inserted designed to meet the modern conditions of municipal affairs and to authorize, through appropriate legislation, what has generally been denominated "Home Rule." The purpose was to do away with special charters granted and subject to amendment only by the State legislature, and, instead to leave each city and village free to frame, adopt and amend those charter provisions which have reference to their local concerns, the legislature being invested with power only to enact into law such broad general principles relative to organization and administration as are common to all cities and villages.

This transfer of powers of legislation from the State legislature to the municipalities, or their representatives, necessitated the imposition of certain checks and prohibitions designed to secure conservative action on the part of those to become responsible for the future conduct of such affairs. The check upon the municipality which is of particular interest to telephone companies is the provision that no city or village shall grant any public utility franchise which is not subject to revocation at the will of the city or village, unless such proposition shall have first received the affirmative vote of three-fifths of the electors of such city or village voting thereon at a regular or special municipal election, and upon such a proposition, women taxpayers having the qualifications of male electors shall be entitled to vote. Article 8. Sec. 25.

The same restriction is imposed upon the township, in the case of which, however, the affirmative vote of a majority of the electors only is required and there is no provision allowing women to vote. Article 8, Sec. 19.

While these provisions put an end to irrevocable franchises without popular consent, they do not take away from the city and village the right to grant franchises that are revocable. While a company can perhaps operate as well with a revocable franchise, if it keeps its "pull" with the municipal council, it cannot get a franchise that is valuable property and that will be an asset in floating a bond issue, without a vote of the people upon the measure.

By the statutes of this State, as they have heretofore existed, every telephone company had the power to construct and maintain its lines over, across and under public places, streets and highways in the State, provided that such use did not injuriously interfere with the other public uses of the same place or injure any trees located thereon. Public Acts 1899, No. 16.

Under this law it was not necessary for telephone corporations to obtain the consent of the municipal authorities of cities, villages or townships, except where there were special municipal charters to that effect.

The new constitution has changed this. It provides that "No person, firm, association or corporation operating a public utility shall have the right to the use of the highways, streets, alleys or other public places of any city, village or township for wires, poles, or conduits without the consent of the duly constituted authorities of such city, village or township; nor to transact a local business therein without first obtaining a franchise therefore from such city, village or township. Article 8, Sec. 28.

Nor shall a franchise or license be granted by any munipality of this state for a longer period than thirty years. Article 8, Sec. 29.

Thus, while formerly we went to the city or village council for a franchise largely as a matter of advertising, now we must go as supplicants, for we cannot do business without their permission. We are even at the mercy of the township board, for the constitutional provisions just referred to undoubtedly repeal the previously existing laws of the State so far as they are in conflict. Schedule Sec. 1, Cyc. 8, 747.

However, telephone companies have left for them this consolation, that these constitutional provisions do not deprive them of any of their already vested rights. Where their lines are established, they may stay without any further permission, license or franchise from anyone whomsoever. Were it otherwise, these provisions would violate the constitution of the United States, which forbids any State to pass any law impairing the obligation of contracts and to deprive any person of property without due process of law. Cons. U. S., Art. 1, Sec. 1. Amend. Sec. 1.

It may be supposed that an enactment of the legislature is necessary to make these sections of our new born constitution operative. But such is not the case. Where a constitutional provision is prohibitory, as are those above referred to, it requires no legislation to execute it, for it is then self executing.

Oakland Paving Co. vs. Hilton, 69 Cal. 497, 11 Pacific 3. Law vs. People, 87 Ill. 385. 8 Cyc. 754.

PROPOSED LEGISLATION.

Coming now to the legislation that is seeking expression in the form of bills pending before the legislature, we find quite a company of hostile measures arrayed against us. The chief of this dangerous array of bills is that sponsored by the successful candidate for governor and advocated by him as one of the means for the realization of his third term ambitions. I allude to the telephone taxation scheme. This is flanked by propositions for rate regulation, the making of telephone companies common carriers and the placing of them under the control of the railroad commission, establishing compulsory connections between companies and the adoption of a uniform system of accounting. We will take each of these in turn.

TAXATION.

The act before the Michigan legislature, which provides for the taxation of telephone companies, if passed, will bring about a radical change in the method of their assessment. The bill that is advocated by the governor, and was introduced in fulfillment of the election promises made by

*Abstract of a paper presented at the convention of the Michigan Independent Telephone Association.

him, is "House Bill No. 15", introduced by Mr. Fouch, January 14, 1909. This bill provides for the taxation of all telephone property, including real estate used in the exercise of the company's franchise or the proper conduct of its business, rights of way and appurtenances, at a rate which equals the average rate of taxation for the year, levied upon the property, upon which ad valorem taxes are assessed for State, county, township, school and municipal purposes. This places the taxation of telephone companies upon the same basis as the taxation of the property of railroad companies, union station companies, depot companies, sleeping car companies, express companies, etc. In fact, the bill is an amendment to the act providing for the assessment and taxation of such companies. This proposed method of taxation does not apply to the property of telephone companies whose gross receipts do not exceed one thousand dollars per annum; the property of such companies is to be assessed locally just as at present. Real estate not actually occupied in the exercise of their franchises, or in use in the proper operation and conduct of their business, is also excepted from the operation of the proposed bill. The companies are required to make detailed statements of their property. This act is a radical departure from the present method of taxing telephone companies which, as you know, are now required to pay three per cent upon their gross reecipts. This bill is being actively opposed by both the Michigan State Telephone Company and the Independent companies of the State, and several hearings have been had before the Legislative Committee on taxation. Opposition to this bill is well founded, as the method of taxation proposed will not only be burdensome, but is unfair and unjust.

This proposed act is similar to one pased in 1881, which was held unconstitutional by the Supreme Court of our State in the case of Pingree vs. Auditor General, 121 Michigan 95, on the ground that the tax imposed was not uniform with that imposed upon other property, bearing the same relation to the State. In the decision of that case, Justice Montgomery well stated one of the serious objections to this system of taxation as follows: "Treating the tax imposed as one on property, based on valuation, and not as a specific tax, the corporations and associations mentioned in this act can no more be discriminated against, as to the assessments made or taxes exacted, than can merchants, manufacturers, or farmers. The tax levied in this act is the average rate of all taxes levied by the State, counties, and municipalities throughout the State. A telephone company in Tecumseh, where the local taxation added to the State tax may not exceed 1½ per cent, may, under this act, be required to pay 2½ per cent. Under the Atkinson bill, a railroad in the northern peninsula is required to pay the same rate as one having a terminus in Detroit, and extending through territory in which local improvements are expensive, and schools are maintained at great cost." (The constitutional objection has now been removed by amendment.)

Another objection to the bill we are considering, is that it does not apply to all telephone companies alike. The telephone company whose gross receipts do not exceed $1,000 per annum pays the local rate, which is apt to be higher than the average state rate, an additional burden being thus imposed upon the smaller companies. This, of course, will work to the advantage of the larger corporations. Such an exception to the act as this may also tend to make it unconstitutional.

The proposed measure is, in fact, a step backward. The present system of charging a stable rate upon gross receipts is an improvement over the general property tax. The disadvantages, inconsistencies and inefficiency of the general property tax have been long recognized. Professor Seligman, of Columbia University, characterizes the general property tax as an anachronism and relic of mediaevalism. The defects of the general property tax are many. First, it lacks uniformity. In scarcely any two contiguous counties of this State is property, even real estate, appraised in the same manner or at the same rate. It frequently happens that corporation property, for example the right of way of a railway, is assessed in one county at an immense sum per mile, and in the adjacent county is treated like a piece of grazing land. In regard to the rate, the assessors follow the practice approved by local usage, or decided by mere caprice. In one county, property is assessed at its full value; in the next at half of it. Again a general property tax lacks uniformity in that it fails to reach personal property. Real estate is always assessed, but personal property, being much of it intangible, is easily concealed and the great majority of it escapes taxation. In fact the more it increases, the less it pays. One of the worst features of the general property tax is that it is an incentive to dishonesty. There is constant temptation to the tax payer to temporarily convert his property into the classes of property that are exempt from State taxation. The reports that tax payers are required to make concerning their personal property are invitations to fraud and perjury. Again the general property tax is regressive because its rate decreases as property increases. It is levied largely only on those who already stand on the assessor's book as liable to the tax on realty. Those who own no real property are in most cases not taxed at all, while those who possess realty pay the taxes for both. One of the greatest weaknesses of the general property tax is that it gives rise to double taxation. Both the borrower and the lender are taxed. The real estate is taxed and so is the mortgage upon it. So it is generally recognized that there is in reality no general property tax, but simply a tax upon real estate.

It is to the general property tax, with all its defects, that the legislature proposes to return in the case of telephone companies. The present system of a tax upon gross earnings possesses many undeniable advantages. It is certain, easily ascertained, and not susceptible of evasion. Moreover, it is based upon what is considered to be the true principle of taxation, namely ability to pay. Unlike property values, gross receipts do not depend on anyone's judgment and so are unaffected by differences of opinion. Such a tax is, moreover, less likely to be shifted from the tax payer to some one else. In spite of these unquestioned advantages in the present system, our State administration desires to return to the general property tax for telephone companies because it expects to secure greater revenue thereby. The bill is one that should be opposed with all the influence and energy which every person interested in the telephone business in Michigan can exert.

Other important bills look to the declaring of telephone companies to be common carriers, the placing of them under the jurisdiction of the State Railroad Commission, and the regulation by the commission of telephone rates. The chief reason why these bills propose to make telephone companies common carriers, is to bring them under the jurisdiction of the Michigan Railroad Commission. It is proposed to give this commission general control of all telephone exchanges, telephone lines and telephone companies within the State, and to make it their duty to investigate any alleged neglect or violation of the laws of the State by any telephone company doing business therein. It is made the duty of telephone companies, as common carriers, to furnish reasonable and adequate service and facilities and to transmit messages upon reasonable request; all charges for any service are to be reasonable and just. Any person, firm, corporation or municipal body may make complaint in writing to the commission that any rate is un-

reasonable or unjustly discriminatory or that service is inadequate, and after notice to the telephone company, the commission must investigate the complaint. If the complaint is sustained, the commission is given power to fix such a rate, charge, regulation or practice as is just, reasonable and adequate and the rate to be fixed shall be the maximum charged for the service in the future. The commission may also investigate rates or charges that it believes is inadequate, and, after notice to the telephone company, may have a hearing and make such order as it shall deem wise. It may also rescind or amend any order fixing any rate upon application of any person or common carrier. The commission may employ inspectors who shall have the power to examine all telephone lines and equipment.

This law further proposes that where it is practicable, and the same may be accomplished without endangering the equipment, instruments or applicances of either party, the commission may on application and hearing, require telephone companies to make and provide through routes for the transmission of toll messages on toll lines and interchange such messages. It is provided, however, that this shall not be construed to require the giving of a joint rate for such service but it shall be lawful for each such company to charge for such joint service, its local rate. The commission may, after hearing on a complaint, establish through routes and joint rates as the maximum to be charged and fix the terms and conditions under which such through routes shall be operated when the companies complained of shall refuse to voluntarily establish such through route and joint rates and provided that no reasonable or satisfactory through route and joint rate exist. If the companies fail to agree upon the division of such joint rate, the commission may, after hearing make a supplemental order providing how such joint rates shall be divided. It is also provided that it shall be unlawful for any company to give any unreasonable preference or advantage to any particular person, firm, corporation or locality or any particular description of traffic or to subject any of them to any undue or unreasonable disadvantage. It is also made unlawful for any person to accept any rebate, concession or discrimination.

Another act, a proposed substitute for "House Bill No. 73," requires all telephone companies to afford reasonable and equal facilities for the interchange of service between their respective lines, and gives every telephone company the right within its lines to intersect, connect with or cross another line and make it the duty of all telephone companies to connect their lines at convenient intersecting points and to perform joint service under such regulations as are imposed by the railroad commission. This act also makes it the duty of all companies to keep accounts and records in the form prescribed by the commission.

I have given the substance of the whole of these proposed bills in their entirety. We may then examine the various elements that they contain.

COMMON CARRIERS.

Let us first look at the effect of the passage of an act declaring these companies to be common carriers. In the present state of the law, telephone companies are common carriers in only a limited sense. A common carrier, strictly defined, is "one who undertakes to transport from place to place, for hire or reward, the goods of such as think fit to employ him."

Fish vs. Chapman, 2 Georgia 349, 46 American Decisions 393.

Such common carriers owe to the public the duty of carrying indifferently for all who may employ them, in the order in which application is made and without discrimination as to terms. Common carriers in this strict sense are liable for all loss or destruction of, or injury to such goods, not occasioned by the act of God, or the public enemy. It will readily be seen that telephone companies are not common carriers within this definition, because they do not carry goods or tangible property of any kind, but they do transmit the sound of the human voice and the intelligence of the human mind. They are, moreover, not insurers of the messages they carry, but are nevertheless bound to serve the public with impartiality and diligence in the discharge of their duties. Whether the effect of the proposed legislation declaring such companies to be common carriers would make them insurers of the messages they send cannot be predicted at this time. Based upon decisions and other jurisdictions, it is my opinion that they would not, but that they would only be liable when actually negligent. Western Union Telegraph Company vs. Clark, 14 Southern 452.

STATE RAILROAD COMMISSION.

The establishment of a commission for the supervision of common carriers is not a new departure. While it has existed in Michigan only since 1907, similar commissions with like powers, including the supervision of telephone and telegraph companies have existed in a number of other states for several years. Louisiana, Georgia, North Carolina, Minnesota, and Wisconsin all have given their railroad commissions jurisdiction over telephone companies. The system seems to be successful, so far as I can learn, wherever tried. Abuses are corrected, adjustments made between companies and satisfactory rates established where a satisfactory showing can be made. Wisconsin has recently had something of a scandal in connection with her commission, growing out of the discovery that the secretary of the commission had accepted pay for bringing about the consolidation of two companies, but this is not a criticism upon the system, but a reminder of the necessity for the employment of conscientious men in the service. In New York the corporation commission organized at the instance of Governor Hughes is meeting with great success in many proceedings.

RATE REGULATION.

The regulation of rates by the State is unquestionably constitutional. It has always been a principle of English common law, which is in force in this State, that common carriers must serve all who apply to them for a reasonable figure. The State may regulate charges irrespective of the fact that telephone companies are declared by statute to be common carriers. In this respect the power of the State is complete. The power of municipalities to regulate rates is in fact only upheld when express authorization from the state is obtained. The power of the state to delegate to a State Board of Railroad Commissioners the authority to establish rates for telephone companies has been upheld. State V. W. U. T. Co. 113, N. C. 213; 4 Am. El. Cas. 586.

Undoubtedly most of us are opposed to rate regulation in any form. We believe that rates should be regulated only by the economic law of supply and demand. Yet, under that law, rate wars are sometimes possible between competing companies, and although the law imposes its own penalty of loss on the rate cutter, yet the public is in the long run compelled to make good the loss by suffering inadequate or poor service, and such service, together with the occasional loss of income to security holders of a telephone corporation, tends to bring the business as well as the financing plans of the companies involved into disrepute.

So, too, in communities where there is but one company, the tendency is to charge all the traffic will bear regardless of its injustice to the general public. This may be an advantage to the Independents, however, for where the Bell companies are alone in the field charging an exorbitant rate, there is the opportunity for the Independent concern.

What I consider to be the chief advantage of the system of rate regulation by commission is that it will put an end to attempts at rate regulation directly by the legislature. The commission plan substitutes, or tries to substitute, intelligent regulation in the place of arbitrary regulation. It would put an end to such attempts at regulation as one now before the legislature. I allude to "House Bill No. 141," introduced by Mr. Haviland, February 17, 1909, and referred to the committee on private corporations. It provides that companies maintaining telephone lines within the State, shall not be permitted to charge tolls for telephone service, outside of any telephone exchanges maintained by such companies in excess of the following rates: Ten cents for the first ten miles or fraction thereof; one-fourth of one cent per mile for each subsequent mile by the shortest route; and a messenger fee of ten cents. The length of time required for the service is not taken into account. So, if this bill were to pass, one hour's conversation over a long distance line would bring ten cents if the places were within ten miles of each other, and a five minute conversation would have to be charged for at the same rate. The second section of the proposed act provides that these rates shall not affect in any way the rentals now charged by a company to its subscribers within the limits of its exchange. Such rentals are to remain at the prices fixed by existing contracts, and such prices to the holders of such contracts at the expiration thereof, or to new subscribers, shall not be subject to increase. The passage of a bill containing such provision would be particularly harmful to the Independent companies, most of which started in a small way with low rates. This act would prevent them from ever increasing their rates as the growth of business and demand for new equipment make it necessary. The result would be an effectual stoppage upon the growth of Independent companies. This bill is very obnoxious, and should not be allowed to pass under any circumstances.

The efforts of well meaning legislators to protect the public from exorbitant telephone rates will be just as effectual and more fair and reasonable if directed to the promotion or preservation of a natural and orderly competition among telephone companies.

CONNECTIONS.

Both of the bills providing for the putting of telephone companies under the control of the State Railroad Commission contain the requirement for connections between companies. In considering this subject we should distinguish between connections with competing companies, and connections with what we may designate as a connecting company. By the latter phrase I mean one whose lines extend in whole or in part between the initial line and the place which the initial company's patron wished to reach with his message. In the absence of statute, it is as much the duty of a connecting company to furnish its facilities to the initial company as it is the duty of the initial company to furnish its facilities to the general public. This rule does not make it the duty of one telephone company to connect with the competing lines. One carrier cannot demand as his right the privilege of using his rival's property for the benefit of his own business.

Under this state of the common law, it does not seem likely that the courts would hold that these bills, if enacted into law, would require a physical connection of switchboards between competing companies. Yet one of the bills is so drawn that it might be susceptible of that construction. It provides that "all telephone companies doing business within this State shall afford all reasonable, proper and equal facilities for the interchange of service between their respective lines, and between other lines and places connected therewith." The same bill, in its next section, provides that "every telephone company shall have the right within its lines to intersect, connect with or cross any other telephone line, and it is hereby made the duty of all telephone companies, doing business within the State to connect their lines at convenient intersecting points and to render, furnish and perform joint service under such regulations as shall be prescribed by the Michigan Railroad Commission."

It is a serious question whether such a requirement would be constitutional or not, even though just compensation is provided for. In only one State of the Union do I know of physical connection being upheld by the courts as between companies. In Montana, under a constitutional provision, it has been held that one company has the right to compel a rival company to connect with it for long distance business, by a plan of trunkage between exchanges.

Billings Mutual Telephone Company vs. Rocky Mountain Bell Telephone Company, U. S. Cir. Ct., 1907.

In the absence of such constitutional provision, the act under discussion could be attacked as a violation of the constitution of the United States, which reads "No person shall be deprived of life, liberty or property without due process of law; nor shall private property be taken for public use without just compensation."

The property of a telephone company is certainly private property. When used by the general public it is devoted to public use. The enforcement of physical connections involves the taking of such property, because it requires an entrance upon the pole line, conduit or right of way of a rival company, and either the actual cutting of the wires of one company by its competitor, and the actual welding to it of the competitor's wire, or it means the entrance by one company upon its rival's premises and the placing of its wires upon the distributing frame and switchboard of its rival. For such a taking of property there will not be any just compensation. A small switching fee would not be an equitable remuneration, for, to Independent companies, the practical operation of such a law as we are discussing means a retarding of development, a destruction of competition and of the independence of such companies and an ultimate reestablishment by the aid of law of the old monopoly.

UNIFORM SYSTEM OF ACCOUNTS.

The last feature of the proposed legislation that I shall discuss is the establishment of a uniform system of accounts. There is perhaps no objection *per se* to such a system. It of course means extra expense to every company, for the system of no one company will be adopted as the model. The reason for it is that the work of the State Railroad Commission may be facilitated. It may benefit such part of the general public as is interested or likely to become interested in telephone securities, for, with a uniform system of accounts, the statements of different companies would be more easy of comparison.

In conclusion, we may say that all these attempts at interference with telephone business should be discouraged, even though there are some points in which some of them might be beneficial. Whenever legislative interference occurs, it is accompanied by a depreciation in the value of the franchise of telephone companies. This was recognized by the Supreme Court of the United States in its recent decision construing the 80-cent gas laws of New York. The court said that the moment immunity from legislative interference with the price of gas ceased, "the great value of the franchise would be at once unfavorably affected." The same is true of telephone companies. Our franchises are not our property, and to protect them from ill advised legislative interference is one of our first duties.

History of the Automatic Telephone

By Arthur Bessey Smith

Assistant Professor in Telephone Engineering, Purdue University.

It is natural that in any new system time is required for engineering practice to settle on the best ways of doing things. The automatic switchboard was so different from manual boards that the methods of arranging apparatus and cables which were standard practice with the latter would not fit the former. For some time no very definite practice obtained, each case being wired as thought best at the time. In general, all the first selectors were put in one place, the second selectors grouped by themselves, and the connectors in still another group. This made the wiring somewhat complicated, and made it difficult to trace the course of a call in case a subscriber got "hung up," that is, made a call wholly or in part and could not release.

Finally certain well defined ideas on the grouping of switches began to appear, and this led to the revision of the arrangement of the cables as well. It was seen that inasmuch as the first selectors represented the subscribers' lines, the connectors which serve them with incoming calls should be associated with them, to make the cabling short. Moreover, if the second selectors can be associated in some way with the groups of first selectors which they serve, it will materially aid in simplifying wiring and tracing calls through the various switches.

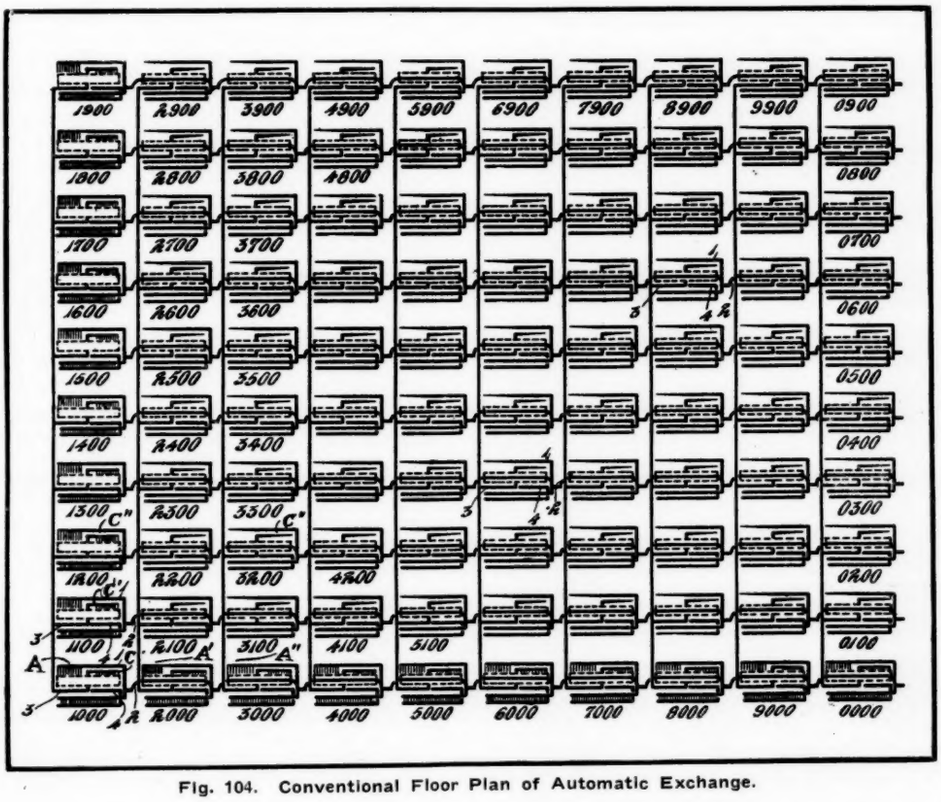


Fig. 104. Conventional Floor Plan of Automatic Exchange.

Finally a plan of layout was devised by Mr. A. E. Keith which solved the matter neatly and economically. Application for a patent was made March 9, 1905, and was issued September 25, 1906, as No. 831876. The general arrangement is shown in Fig. 104, and may be termed a floor plan. The switches are represented by short vertical lines and are in groups, each group being mounted on a frame. There are ten frames in each vertical row and ten rows, making a total of 100 frames. Each frame is intended to represent the switches for serving 100 subscribers and will consist of 100 first selectors, ten second selectors, and ten connectors. Thus the size of the exchange illustrated is ten thousand lines.

The left vertical row of frames constitute the first thousand that is serving all the subscribers whose numbers begin with "1," as "1248," or "1746." The next vertical row to the right is the second thousand, all the numbers beginning with "2," as "2365," or "2906." The last row is the "naught" thousand, and its numbers being in "0." In automatic work, "0" has the meaning of "ten," and is the tenth in any series.

In each vertical row constituting a particular "thousand" the ten frames are arranged in a certain definite order. At the bottom is the "0" hundred or frame; above it come in order the first hundred, second hundred, etc., to the ninth hundred or frame. The "0" frame contains the first selectors of the lines whose numbers are from 1000 to 1099; the first hundred has the numbers from 1100 to 1199; the third from 1300 to 1399, etc. For example, in the first row at the left (the first thousand) the third hundred will be 1300, while the frame adjacent to the right will be 2300, since it is in the second thousand. In each case, the full number of a frame will be its own hundred number with the proper thousand digit prefixed. The full number of the subscribers whose first selectors are in the third frame of the first thousand will be from 1300 to 1399 inclusive, while the corresponding frame in the second row or thousand will be from 2300 to 2399 inclusive. We may say, then, that the horizontal rows contain frames of corresponding hundreds, although they are in different thousands.

We now have the proposition of connecting any subscriber in any of these frames to any other subscriber in any frame. Regarding the problem from the automatic point of view, we shall select the desired line in three steps. First, we will pick out the desired thousand, which is the first digit of the number. This duty is performed by a first selector switch. Second, we will pick out a particular frame or hundred-group in that thousand, which is the second digit of the number. This duty is performed by a second switch. Third, we will pick out a certain number in the selected frame, which number is the last two digits in the whole call number. This last duty is performed by the connector switch.

* Continued from issue of April 24, 1909.

Reference to Fig. 104 will also show the manner of running the cables which are to trunk the calls. The short vertical lines at the bottom of each frame represent the 100 first selectors belonging to that hundred group. At the top of each short line is the bank of contracts for that switch. Cable 2 multiples together all these bank contacts in the first row of frames. Similarly a cable, 2, in each row, multiples together all the first selector bank contacts in all the frames of that row.

One-tenth of the wires in cable 2 end in second selectors, A, in the 1000 frame, another tenth of the wires end in second selectors, A′ A′, in the 2000 frame, and so on to the 0000 frame. In the cable 2 which serves the second horizontal row (frames 1100, 2100, 3100, etc.) each tenth of the wires end in second selectors in some frame of that horizontal row. This is true of all the horizontal rows.

In the same way the second selector bank contacts of each thousand are multipled together by cables 3. Taking the left vertical row of frames (the first thousand) as an example, one-tenth of the wires in cable 3 terminate in connectors C, in the 1000 frame . Another tenth end in connectors, C′ C′, in the 1100 frame, and so on to the 1900 frame. In each frame the banks of the connectors, C, are multipled together and run in cable 4 to the first selectors, where they are attached to the subscriber lines leading out of the exchange to the substations. Cable 4 is called the "normal" cable.

If a subscriber in the 1000 frame desires connection with a subscriber in the 3200 frame, the former will first operate his own selector in the 1000 frame. This machine will pick out a non-busy trunk in cable 2, which ends in a second selector, A, in the 3000 frame. He will now manipulate this second selector, causing it to pick out a non-busy trunk in cable 3, leading upward and ending in a connector *C*", in the 3200 frame. This connector will pick out the individual subscriber in that frame.

But if the subscriber in the 3200 frame calls for any one in the 1000 frame, his path will be as follows: From his own first selector in the 3200 frame through cable 2 to the left to a second selector in the 1200 frame, thence through cable 2 downward to a connector in the 1000 frame, from this connector to the first selector of the called line, and from there out to the substation.

In order to show the relations of the frames, switches, and cables more clearly Fig. 105 has been prepared. It shows a portion of four thousands, but it may be understood as extending both to the right and back so as to include the 100 frames of a ten thousand line exchange. Examine closely the frame nearest, that is, the 1000 frame *A*. Here the switches are each represented by a thick, heavy vertical line. The bank of contacts for each is represented by the arc of a circle just below the vertical line. There are four horizontal rows of first selectors, "*X*" each row having 25 machines. On the top shelf of the frame are the second selectors, *Y*, while the connectors, *Z*, occupy the rest of the shelf. From the banks of the first selectors cable 5 carries all the connections to a terminal strip, 6. In the next frame to the right, *B*, which is the 2000 frame, a similar cable carries all the first selector bank wires to the terminal strip, 8, exactly like 6. This is true of all the first selector bank cables, 5, in all the frames, so that at the upper right hand corner of each frame is a terminal strip with wires from all the first selector banks in that frame.

The first selector multiple cable, 7, runs from terminal strip 6, to terminal strip 8, multipling all the terminals together. This cable continues on to the right from strip to strip, so that all the first selector banks in all the "naught" hundreds are multipled together, regardless of what thousand they are in.

In the 1000 frame, *A*, 11 is the first selector trunk cable, which taps one-tenth of the circuits in the first selector multiple cable, 7, at the terminal strip, 6. It carries these ten circuits to the second selectors, *Y*. These ten circuits all come from the first or bottom level of the first selector banks in frames *A*, *B*, *C*, etc., that is, from all the "*O*" frames in the various thousands. In the 2000 frame, *B*, another ten circuits are tapped out of the first selector multiple cable at the terminal strip, 8, and running through the first selector trunk cable end in the second selectors in that frame. These ten circuits come from the second level in the first selector banks in frames *A*, *B*, *C*, etc. In a similar way the circuits coming from any level in the first selector banks terminate in second selectors in the "*O*" frame of the thousand which that level represents.

In the same way the first selector bank cables, first selec-

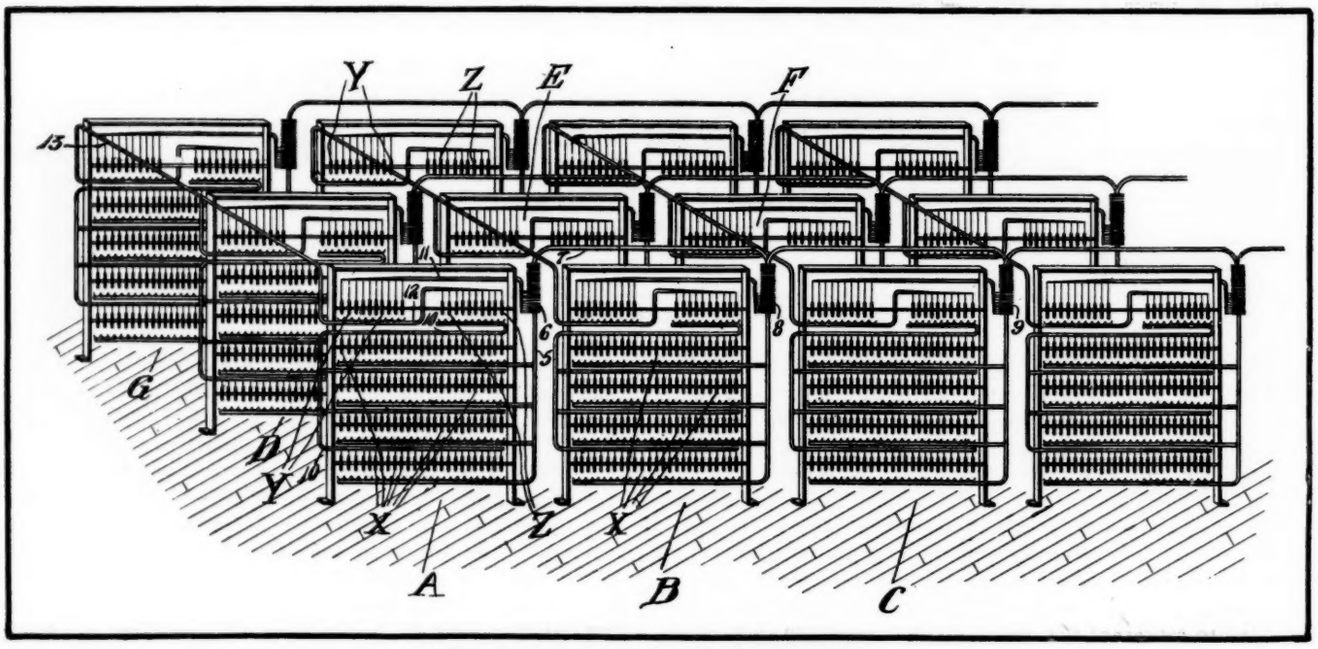


Fig. 105. Frame and Cable Arrangement.

tor multiple cables, and first selector trunk cables unite all the "100" frames in the next row back, that is, *D*, *E*, *F*, etc., which are the 1100, 2100, 3100, etc., frames respectively. The same scheme of cabling holds for all the rows.

The second selector bank cables are handled in exactly the same way, though in the illustration (Fig. 105) the terminal strips are omitted. But the term "second selector bank cable" applies to the cable extending from the second selector banks to that terminal strip. The term "second selector multiple cable" means the cable which multiples together all the terminal strips in a given thousand, while the "second selector trunk cables" extend from the terminal strips to the connectors, each cable tapping off ten of the 100 circuits.

Fig. 106 shows how the bank contacts of all the first selectors in any frame are multipled together. Each curved row of contracts, *A*, may be taken to represent a certain level in a certain first selector. Forty of these are shown, but the principle applies to the full 100. If we say that these are the first level contacts, then it will be seen that contact No. 1 of that level is wired to contact No. 1 of each and every other first selector bank in this frame. This point-for-point connecting is consistently followed through all the levels. All these wires lead into one cable, 5, which runs up to the terminal strip, 6, of Fig. 105.

All the circuits coming thus from a given level (Fig. 106) finally end in second selectors in some thousand. In each level there are ten sets of contacts, hence there are ten second selectors at the other end. This is done to give a plurality of chances of getting the desired connection. Suppose this to be the fifth level. If some person in this frame calls for a number in the fifth thousand, his vertical and rotary wipers will occupy the trunk to the first one of the ten second selectors in the fifth thousand. At the same time his private wiper will ground the corresponding contact in the private bank, thereby making it "busy."

If another person in this frame also calls for the fifth thousand, his private wiper will find the first trunk busy, and will be forced to take the second circuit, ending in the second one of the ten second selectors. A similar action occurs if several trunks are busy, the wipers being rotated automatically until a non-busy circuit is found.

As far as the calls from this frame to any given thousand are concerned, the first one of the ten second selectors will be busy more than any of the rest, since it is always the first to be chosen. The second machine will be used less than the first one, but more than the third, fourth, etc. Finally the last ones might rarely if ever be called on for service.

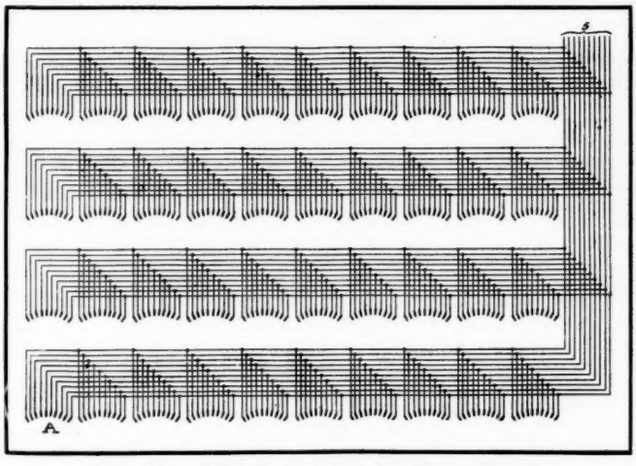


Fig. 106. Multipling of First Selector Banks.

This brings us up to the exact manner of connecting the first selector multiple cable, 7, Fig. 105, which runs from frame to frame, multipling together all the banks of all the frames in a row. This cable necessarily connects like levels together, since each level corresponds to a certain thousand. If the wires from individual contacts in each level are multipled point for point through all the frames, it will result in a very unequal distribution of the work on the second selectors. The first machine of the ten in any frame would be worked the hardest, the second a little less, and so on to the last, which would receive the least of the traffic.

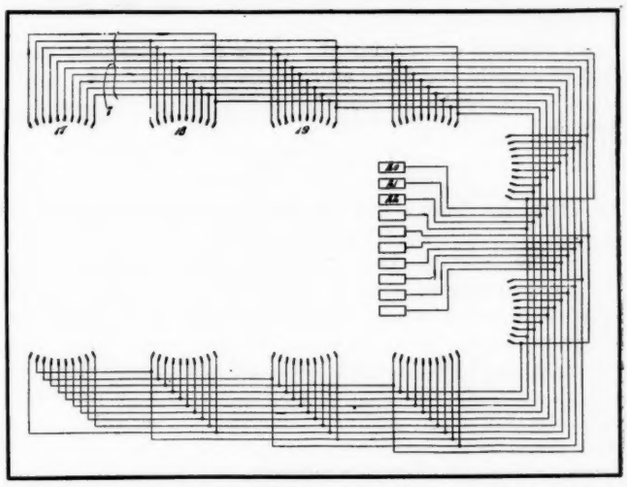


Fig. 107. Method of Rotating Connections in First Selector Multiple Cable.

To obviate this, the connections are rotated, as will be described.

In Fig. 107, let 17 represent one level of contacts in a first selector in the "*O*" hundred in the first thousand. Since all the first selector bank contacts in a frame are multipled together point for point, 17 may represent a certain level in all these hundred first selectors. Also let 18 represent the corresponding level of contacts in the first selectors of the "*O*" hundred of the second thousand. Then 19 will be the same in the third thousand, and so on through the ten frames represented.

The ten circuits proceeding from this level and in ten second selectors, 20, 21, 22, etc. If we consider 17, 18, 19, etc., to be the first levels, then the second selectors will be located in the first thousand. In the bank 17, the first, or left hand contact will be found to run to second selector 20, which is the first machine of the group of ten. The second contact runs to the second machine, 21, the third contact to 22, and so on. In this way any call from the first thousand coming from the frame which 17 represents will have second selector 20 as its first choice, 21 as its second choice, 22 as third, etc.

But notice that bank 18 has its first contact wired to second selector 21, the second of the group. Hence any call for the first thousand coming from the frame which 18 represents will have second selector 21 as its first choice, which will not interfere with the first choice of 17. In the same way the frame which 19 represents has second selector 22 as its first choice, the rest of the bank contacts being wired to the succeeding second selectors in order.

It will be readily seen that this method of wiring secures a fairly even load on the second selectors. It also reduces the time required for a first selector to find a non-busy second selector. This automatic hunting must be done in the interval between pulls of the subscriber's dial. If the first selector is forced to hunt past eight or nine busy

points, there is danger that the subscriber may pull the next digit before the work of the first selector is done. If the next series of impulses begins to come in before the first selector has found a non-busy trunk, the first few impulses will be lost, resulting in a wrong number being obtained. If he intended to call 2749, he might get 2549, due to a change in the second digit.

This method of rotating the order of connections is applied in exactly the same way to the second selector multiple cables, in order to equalize the work of the connector switches.

(To be continued.)

The Telephone from a Business and Investment Standpoint.*

By Howard S. Baker.

President, the Sioux City Telephone Company.

The experimental stage of the telephone is past, and the speculation which was formerly indulged in by some ambitious promoters is at an end. We are now on the same level as mercantile, banking, railroad, and other enterprises occupy, and it should be comparatively easy to estimate the real value of any telephone company. The value of its stocks or bonds should depend largely on its assets and earning power and future prospects.

Some thirty years have elapsed since the telephone has come to be used in a commercial way. This great invention, at its birth simply a top, has come to be an absolute necessity in social and business life. In the history of all inventions there has been nothing which has so quickly and thoroughly entrenched itself in public favor as the telephone. All indications point for an increasing demand for telephone service. There is no business more reliable. It is not dependent upon any whim or fashion, nor do any of the disturbing factors so likely to interfere with the conduct of other lines of business in the least affect the telephone. Whatever political party is in power, whatever foreign nations are at war, make no difference with the necessity for the telephone in all business and social life. There is probably no line in which there is less danger from unforeseen losses through catastrophes, bad debts, etc., than in the telephone business. One reads in almost every issue of the daily press of some terrible accident on steam or electric trains, or in great manufacturing enterprises, in which the losses run up to fabulous amounts. It frequently happens that a single accident to any of these companies disturbs the dividends of corporations for many years. The telephone business is not conducted in a manner to feel such experiences.

During the past 11 years the enormous sum of $450,000,000 has been invested in the construction of Independent telephone systems throughout the United States, a large proportion of which has been local capital from the communities in which the system is located. So great and phenomenal has been the growth of the Independent telephone that today in the state of Iowa there are over 200,000 telephones. Upon the expiration of the Bell patents there seems to have been an uprising all over the United States in respect to the telephone business, and thousands of Independent telephone companies have been organized. The support accorded these Independent companies by the public has been astonishing. It is almost impossible to find an instance where a local Independent telephone company has not received the hearty and loyal support of the citizens in the sections in which it is sought to operate. The arbitrary methods employed by the Bell company, the lack of any local sentiment in its favor, has made it comparatively easy for the Independent companies to work a revolution in the telephone business. The Independent companies have invariably succeeded in securing the moral and financial support of the best citizens of the various localities. They have thus been able to finance their plants, and through the support of their loyal constituency have easily secured a list of subscribers far in excess of the Bell.

In the organization of the Independent telephone systems the organizers have felt that they were acting practically as trustees of the citizens of their respective localities by furnishing telephone service at reasonable rates; in turn, therefor, the people of the various localities feel that they are not only under a business obligation but a moral one as well to loyally support the Independent organizations. They feel that they are partners in the Independent companies in reducing the cost and making improvements in telephone service, and by patronizing and assisting these Independent companies they are assuring themselves of a continuation of good service at reasonable prices, with no possibility of returning to the old methods of restricted and poor service at high rates. As a result the Independent systems have grown enormously as compared with the growth of the competing Bell company.

For the purpose of stifling the growth of the Independent system the Bell company early made the experiment of buying up the Independent system. The most notable case of this kind in the state of Iowa occurred at my home town—Sioux City—where some years ago an Independent telephone plant was started, with inadequate apparatus. But even with its crude operation, it presented such tremendous competition that the Bell company felt compelled to purchase it. The Bell company, after doing so, advanced its rates, and continued its former arrogant methods, operating as unsatisfactorily as it had done theretofore. It pursued this policy for some months, and with a great flourish announced that it had bought the Independent company. Our citizens were indignant when these facts were made public, and, notwithstanding the discouragements presented, they organized the Sioux City Telephone Company, for which the business men and capitalists supplied a sufficient amount of funds to build a system of the most modern type. Our company is being successfully operated today with over 4,500 subscribers, and is growing at a rapid rate.

The necessity of the farmer having telephone connection with his nearby town is so great as to make it almost imperative that he be supplied with this service. The convenience afforded him in reaching his neighbors and his home market by telephone is of so great importance, and the expense so small, that it is predicted that the farmer who is endeavoring to handle his farm in a businesslike manner will soon find the absolute necessity of being placed in close communication with his home market.

In practically every other line of business the merchant and manufacturer is compelled to change the style, quality, weight, shape and price of his goods from year to year, and often from season to season, to meet the competition of his neighbors and to gratify the whims and fashions of the public. Those changes require the expenditure of enormous sums of money in new plans, in new buildings, and in hundreds of other ways. The telephone business presents no such conditions and requirements, no such frequent expenditures of time and money, to meet the wishes of the public.

There was a period when enormous and unnatural profits were received from the telephone. This condition was incident to the time when the Bell company was first organized. But this period of stock jobbing is past, and we are down to the legitimate business proposition of "What are your assets and liabilities and your earning power?" This is what an investor desires to know, and he must first satisfy himself on these points before he will engage or invest in the securities of any telephone company. The first requisite of a stock or bond issue which shall carry conviction

*Paper presented at the Convention of the Iowa Independent Telephone Association.

of safety and security with it is the character and intelligence in the personnel of the corporation; the true foundation of the corporation is found in the individual members thereof. The highest quality of any investment should be its soundness as a permanent quantity, then an inherent ability to sustain this quality. From the investor's standpoint the acceptable security is that which represents real value and possesses that quality which enables it to grow stronger as it grows older, with its foundation broadening and deepening as the pressure of time settles it in its permanent home.

In estimating the value of the securities offered by the Independent telephone companies, it is of the utmost importance to examine the question of location, surroundings, population, outside connections and inside influence and management. Necessarily the Independent movement has been localized. A critical examination will show that nearly all the Independent exchanges of the country are under the control and management of home people. These people have ventured their time and money in an enterprise which protects their neighbors as well as themselves from the extortionate charges that they were forced to pay the monopoly, and the public understands that if it should withdraw its generous support from the Independent companies they would feel keenly the extent of the loss in the restoration of the old talking tariff. Telephone securities are good and desirable as any investment only when the conditions behind them are of a character to indicate permanency, stability, strength and earning power equal to, and, in fact, greater than the immediate necessities of the company. Statistics will show that less than 2 per cent of all the Independent telephone companies of the United States have defaulted on the interest or principal of their bonds, which is certainly a very satisfactory showing as compared with any other business or corporation now in existence.

From a personal experience of several years in the telephone business, I believe that there is no broader field and none which offers greater advantage for one to engage in; there is no business which has so bright a prospect for the future, or offers such opportunities for extension, as the telephone. To the holder of stock it offers more favorable consideration than any of the public service or other corporation stocks. Its earning power is more stable, its income more dependable, and the conditions more promising for an advance in price of its stock. Perhaps the investor who is desirous of a particularly safe investment, seeks a bond. He looks for a telephone company whose properties have been well built, are in a good physical condition, and provide an income large enough to provide for the interest and other expenses, leaving a surplus sufficiently in excess to provide for maintenance and depreciation, and he will have no bond offered him which assures better security or a safer form of investment, than that of a well-managed telephone company.

Central Office Locations

By S. D. Levings

In contemplating the work of making a development study, it has been seen that several assumptions were necessary upon which to base the work, and in the same way, assumptions have to be made before beginning the work of locating the central office. The first detail to be decided in undertaking this work is the number of central offices that will be required. There are three periods which should be considered: the present five year and ultimate, or 20 year periods. Having determined the number of offices required for these periods, their location is desired. It is assumed that the proper location of the present office, or each of the present offices, is a definite and fixed point, which can be determined with great accuracy. The locations for the five year and ultimate offices are assumed to be tentative only, as any change in the growth of the town, from the estimated growth as shown by the development study, will greatly tend to change these theoretical locations. Assuming that the problem resolves itself into the divisions corresponding to the three periods, it will be logical to take up the discussion for two distinct conditions, that of the single office town, both present and ultimate, and that of a multi-office town either present or ultimate.

The methods which have been evolved for determining the number of offices for both the present and ultimate plant, have been largely determined from past experiences at existing plants, coupled with logical deductions from assumptions, and careful engineering calculations. There is now a factor to be considered in all future calculations, assumptions, and decisions, which has not been mentioned heretofore, because of its unimportance in the making of the development study. This factor is cost.

In making the development study, the cost of the plant to be constructed was not considered in a definite way, and physical problems did not influence the cost of making such a study. From now on, the cost factor will play a most important part in the engineering of the plant, and its influence is first noted when determining the central office location. It should be stated that were it not for this factor, the office could be in any one of a hundred locations, and in each give the desired service. In calculating the central office locations, the question of plant construction begins to assert itself. For the present two main items are worthy of notice. The first is the problem of getting the wires from the central office to the subscribers' premises, and the second is the problem of getting them there in the most economical manner. Physical conditions enter into the problem to a large degree, but only as they influence the routes to be chosen for distribution and affect the costs. In the present discussion of the methods to be used for determining central office locations, it is assumed that the reader is familiar with the general means by which the wires are distributed from the central office to the various subscribers premises. The outside portion of the telephone plant which takes care of wire distribution is divided into five main classes: 1. Conduit plant. 2. Main cable plant. 3. Branch of subsidiary cable plant. 4. Pole plant. 5. Wire plant. The main items of cost are, therefore, involved in the construction of these portions of the distributing plant. The location for the central office, or each office, then, should be such that the greatest number of subscribers will be reached with the minimum length of wire. A minimum wire length is chosen as a basis of calculation, for the reason that the wires are carried in the conduit system, and on the pole system, and such being the case, a minimum wire length means a minimum wire, conduit, and pole live length. Although at this stage of the work it is impossible to finally determine the routes to be taken by the cables, conduit, etc., it is assumed that the physical conditions of the town are so well in hand as to enable tentative routes to be selected. These will generally coincide with the final distribution of the various main portions of the distributing plant.

Taking up the problem of determining the number of

offices required, the first factors are the present five year and ultimate line figures, as shown on the final record map prepared in making the development study. Next in importance is the extent of the territory to be served.

Not many years ago, when but little was known of the telephone art, and its attendant engineering science, the practice followed in locating central offices and calculating their capacities, was very unreliable. Generally the location was determined to be at, or as near as possible to the intersection of the two main thoroughfares. The capacity was determined from the guess of those in charge of the work, and generally this guess cared for approximately two years' growth, as the development in those days was much faster than it is now. As a result of these methods, the location of the office five years after it was established was such that the cost of reaching additional subscribers was out of all proportion to the earning power of the stations thus connected for service. These costly errors are corrected by the application of a few simple calculations, and some common sense, gained by experience, in each new case.

Extent of territory is an important factor in determining not only the central office locations, but the capacity of the present day switchboard as in territory of ordinary density the limiting area for commercial transmission No. 22 B. & S. gauge wire will contain about 10,000 subscribers, which is also determined by considerations of switchboard design to be a fair maximum. As a reverse condition, it has been found that territories involving more than 10,000 line possibilities, except in the business district are of such an extent as to require one of two things: First, larger wires between the central office and the subscriber's instrument, to furnish a proper standard of transmission; or second, the establishing of a second office. Exceptional cases are sometimes encountered, where the territory involved is all out of proportion in size to its subscribers, but the development in which will not warrant more than a single office at any time. In such a case, a study will have to be made to determine the investment in cables carrying wires larger than No. 22 B. & S., as compared to the cost of a second office, the equipment in both offices to total the requirements of the territory. Such a condition may throw a normally single office town into the multi-office class, and the methods to be followed in treating such cases will later be discussed at length.

As a result of the relations between the central office and the territory to be served by it, the rule for determining the number of offices required at the three periods, present, five year, and ultimate, is as follows:

Divide the number of estimated lines at any particular period by 10,000, and the resultant figure will be the number of offices required.

This rule is only to be applied under normal conditions. Where the territory is abnormally small or large, special studies will have to be made to determine the economical number of offices.

In calculating the telephone center or central office locations, as is to be described, a white print map, such as was used for the final record map in the development study work, is needed. Upon this map, the present number of telephones should be placed in the individual blocks in which they are assumed to be located, such figures being obtained from the records of the development study.

The number of telephones to be served by a central office does not influence its location relative to such telephones. Therefore, for convenience, the problem of central office location will be taken up for a town which will require but a single office, initially and ultimately, leaving the multi-office determinations to follow. To reiterate, the location of the central office should be that point which will require but a minimum wire length, to serve the greatest number of subscribers. This point will be at what is known as the "Telephone Center."

The telephone center is that point within any group of telephones, or possibilities, from which the sum of the distances, along the proposed telephone distribution lines, to each separate telephone, is a minimum. In locating the telephone center, it is assumed that the distances from the telephone center to each telephone will be measured along such streets and alleys as are accepted for distribution routes. As the distribution system cannot be designed until the central office location has been determined some method of obtaining the location of the proposed distribution lines, and their routes, must be found. In the case of very small towns, say, of 2,500 inhabitants or less, there are usually two principal thoroughfares, running at right angles to each other, and intersecting at a point approximately in the center of the town, and, consequently, of the telephone district. In such a case, the main distribution routes would lie in these main thoroughfares, and the central office may be located at, or as near as possible, to their intersection, without going into the detailed work to be described for ascertaining central office locations. It is felt that this procedure is warranted in towns of the size mentioned, as the error in locating the central office, if this procedure is followed could not amount to enough to make an appreciable loss in plant cost. In the case of the larger towns, it is assumed that the streets intersecting at the telephone center will also be the main routes of distribution, but, as considerably more territory is covered, and a larger number of telephones must be considered, it is necessary to work out in detail the calculations for the central office location. Therefore, in all cases where locations are assumed, as well as those which have been proven in, the distribution lines are assumed to lie in the intersecting streets forming the location, and in such other streets as are found necessary to reach the telephones.

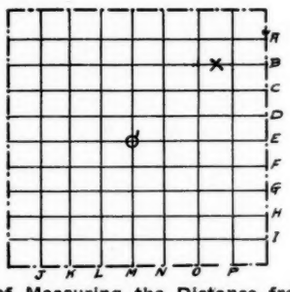


Fig. 1. Method of Measuring the Distance from the Telephone Center to any Telephone.

The definition of a telephone center requires that all measurements shall be among the proposed routes of distribution. Having determined what these proposed routes are to be the next step is to determine the manner of measuring the required distance from the telephone center to any telephone. As an example of the method to be pursued, consider Fig. 1, which is assumed to represent a town whose streets are laid out at right angles to each other, and designated by the letters *A-B-C*, etc. Let it be further assumed that *O'* has been assumed as the telephone center, and that *X* represents a telephone, the distance from which to *O'* is desired. In the general statement it is assumed that the streets intersecting at the telephone center are to be considered as the main distribution routes, and they, in this case, are streets *E* and *M*. Telephone *X* being located on street *B*, the distance to it from *O'* must be measured from *O*, north in Street *M* to Street *B*, and thence east in Street *B* to *X*, or must be measured from *O'* east in Street *E* to Street

O, thence north in Street *O* to Street *B*, and thence east in Street *B* to *X*. As the streets have been assumed to intersect at right angles, it is immaterial which measuring route is chosen, each being the minimum distance in accordance with the definition, and equal as to length. Conditions do exist which include the presence of diagonal streets, and in such cases a particular measuring route must be chosen, with reference to its length. The diagonal street, and its influence on the telephone center, will be taken up subsequently, but for the present, conditions involving only right angle street intersections will be considered.

Having determined the method to be followed in measuring the distance from the telephone center to the telephones, in order to comply with the definition, a further case must be assumed in which these measurements are used, and the telephone center determined. Let Fig. 2 be assumed as illustrating the same territory shown in Fig. 1, with the addition of a number of telephones, represented by circles, located at random. In determining the telephone center, the first step is to arbitrarily assume a point, and, from this point as a basis, work out the study to determine the error between the assumed and true center. As in the former case, let *O'* be the assumed location from which, as a basis, the study is to be worked out, then the next result to be obtained is the relation of this point to the telephones in the territory, in order to determine whether it complies with the definition of the telephone center.

As stated in the explanation of measurement, there may be two ways, in rectangular lay-outs, of obtaining the minimum distance from a telephone to the telephone center, each of which are equal in length and for this reason only, the perpendicular distance from the telephone to either of the axes intersecting at the telephone center need be considered. In the case in question, streets *M* and *E* are the axes, *M* being the vertical axis, and *E* the horizontal axis. Considering axis *E*, it is clear from inspection that the distance from *O'* to any telephone lying along street *E*, is at a minimum and the same is true of those telephones lying along axis *M*. It is therefore assumed that all telephones lying along the axes, need not be considered in determining whether or not the point at which the axes intersect is the true telephone center. Having assumed *O'* as the center, the number of telephones on each side of both the horizontal and vertical axes are wanted, for, when there are an equal number of telephones on each side of each axis, the perpendicular distance from all telephones to the axes, must be a minimum. This is illustrated by referring to Fig. 2. Considering only the horizontal axis, it is seen that there are 14 telephones north of axis *E*, and 10 telephones south.

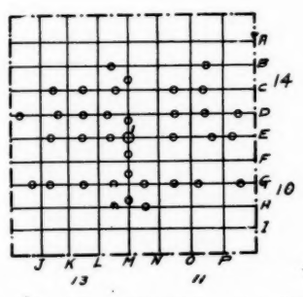


Fig. 2. Sample Data for Determining the Telephone Center.

It is apparent then, with the unbalanced condition, that axis *E* is not located in such a position as to make the perpendicular distances to all telephones a minimum. In a like manner it is seen that there are 11 telephones east of axis *M* and 13 west of it. The intersection of these two axes being *O'*, it may be said that, since neither axis is in its proper location, to obtain a balance of telephones, the point of intersection must also be out of its true location. The problem, then, resolves itself into one of locating the horizontal and vertical axes in such positions that there will be an equal number of telephones on each side of the respective axes. When such locations have been obtained, the intersection of the axes must be the point to which the distance from all telephones is a minimum, measured along the proposed routes of distribution, which was to be proved.

(To be continued.)

LETTERS ON PRACTICAL SUBJECTS

A Telephone that Would Work Only Eleven Hours a Day.

A few months ago it was my privilege to be assigned to a very perplexing trouble. One of our subscribers reported that she could not get central, as she stated, "last night." A man was sent up to the house, made all tests on the telephone, and reported, "Found O. K." Next day the same report came in, the same man was sent on it, and the same O. K. turned in. These reports kept up both ways for some time, the lady saying that she could not answer the rings or get central between six p. m. and seven a m.

Everybody in the exchange was on the trouble at one time or another until Mrs. M.'s reports became a joke, and nobody took any stock in what she said. Finally she began to look on the matter as something supernatural, believing that she or the telephone was bewitched. Not believing in witches I asked the wire chief to give me the trouble, and let me "shoot" it in my own way. He did so. The first thing I did was to go to the telephone and make a thorough test. I found it O. K. I had a talk with the lady, and she said positively that for three weeks she could not use the telephone for more than eleven hours a day. I said nothing more, only told the lady that I was assigned to the trouble and that I would not leave it until satisfaction was reached in one way or another.

That night at 7:30 I called her from my home, and "Central" rang for ten minutes, off and on, but could not get her. I then called her nearest neighbor, got her all right, and asked her if she would call in Mrs. M. She did so. Mrs. M. said her bell had been ringing for ten minutes but she could not answer it. I then went to her house, and went in on the loop on the outside of the house with my receiver, and could not get "Central." This made me think one side of my line was open. Then I went to another telephone on the same line and could get "Central." Next day there was a new piece of loop run in which cured the "witches." We found one side of our line open in the junction splice, but how should the atmosphere give the results that I have spoken of?

MORAL: A subscriber may make one or two unjustified complaints, but if there are more than that, get busy and find your trouble. F. D. P., N. Y.

Ground from Locating Batteries in a Wet Place.

A certain party line in a magneto exchange was very noisy when connected to a toll line. No particular difference in the trouble was noticed on account of the talking of any particular subscriber. The noise was nearly always present, yet at times the line would be very clear.

In an effort to locate the trouble, an inspection for grounds was made over the entire line, but none were detected. Subscribers' drops and instruments were then inspected, but the troublemen reported everything O. K. Subscribers' drops were then taken off, one at a time, and at last it was decided that the fault was in C's drop or instrument. A man went to C's telephone, and on having the

operator connect him with the toll line, found the trouble still on. He then went to A's telephone, and, on repeating the test, found the line clear. Returning to C, he made a thorough inspection of the inside wiring, the arrester, and the instrument. On going to the batteries, he found them in the cellar, set upon the wall of a cistern, in a very damp place. He put the batteries upon a dry shelf and changed the wiring and this removed the ground which had been caused from leakage through the batteries to the moist earth.

Perhaps the principal reason why we were misled in this case was that C's family was in the habit of taking an interest in nearly all the conversations passing over the line. When they so far forgot themselves as not to listen on the line, the ground through the battery caused no trouble, but there would have been none anyway if the batteries had been located in a dry place.

New York. E. D. T.

Anchor Requirements.

An ideal anchor is, in my estimation, one which accomplishes the purpose for which it is designed without a needless outlay of money. The primary object of placing the patented anchor upon the market was to provide a substitute for the old guy rod and slug at a lesser cost.

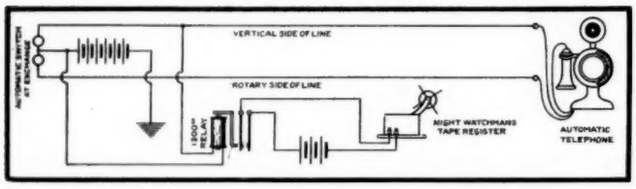
The most satisfactory anchor, from the viewpoint of a construction man, is the one that can be installed in the least time, with the fewest tools, for the least cost to satisfactorily hold its load, with no interruption of traffic, and less complaint from property owners than other types. It may have to be installed at the edge of a flower bed, on private right-of-way, at property lines, in a lawn, or under a hedge, and in numerous other places, for all of which its adaptability should be considered.

L. W. Tyler.

Call Recording Device for Automatic Exchange.

In an automatic exchange occasions arise for making a record of every call sent over a particular line. This may be accomplished by connecting a 1,300 ohm relay and night watchman's tape register to the automatic switch, as shown in the sketch. The 1,300 ohm relay operates every time a ground impulse is sent over the vertical side of line.

The device may be connected to any subscriber's line, and on outgoing calls will record, on a tape, every number



Circuit Diagram of Call Recording Device.

called, marking every push of the button as well as the release.

On incoming calls the tape will show that a call has been received, but does not show from what telephone number the call came.

Columbus, Ohio.

F. B. Moody, switchboard manager,
The Columbus Citizens Telephone Company.

Chorus—This Was Not Our Companee-e-e.

"There's been a complaint about the telephone here," said the young man with the kit of tools under his arm, "and I've been sent here to fix it."

Mrs. Hunks showed him where the telephone was, and he proceeded to remove the outer case and examine the mechanism.

"What are you doing here?" demanded Mr. Hunks, who happened in while he was at work.

"Repairing your telephone."

"Who sent you?"

"The telephone company. They told me your phone had been reported out of order and—"

"Where are your credentials?"

"My what?"

"Your credentials—your authority. How do I know you've been sent here to fix this telephone?"

"What else do you suppose I came for?"

"I don't know. Men work all sorts of schemes to get into people's houses nowadays."

"Think I came to steal something? Do I look like a thief?"

"Can't tell by a man's looks what he's up to."

"Well, you watch me, and if I do anything that looks like stealing you stop me."

Tightening up a screw or two, making sundry other adjustments, and replacing the case, he lifted the receiver from the hook and placed it to his ear.

"Hello!" he said. "Give me the repair department. Hello! Repair department? This is Hoover. I'm at Flammer 4 double 1. Man here thinks I'm a thief. Tell him what I look like, will you? Here, mister, put this to your ear and listen."

Mr. Hunks complied.

The description he got of the young man was entirely satisfactory.

But what he heard about himself made his hair curl, and while he was listening to it, the young man slipped out.—Chicago Tribune.

QUESTIONS FOR THE FIELD

Plenty of "QUESTIONS" are on hand. We are waiting for ANSWERS to the question published on page 473 two weeks ago. Who will send the first answer? SEE PAGE 473, April 17, TELEPHONY! Send your own question with it!

April Meeting of the Pittsburg Section American Institute of Electrical Engineers.

At the regular monthly meeting of the Pittsburg Section, A. I. E. E., held April 13, Mr. J. S. Jenks showed by means of a large number of lantern slides the system and tools which he and his assistants have developed for repairing their 25,000 volt lines in order to avoid the necessity for linemen to come in contact with the line conductors, and showed how completely equipped poles could be stripped of all wires and cross arms, and the insulators, cross arms and conductors replaced without interrupting any circuit. The paper excited a lively interest among the body of engineers present, which included representative men from all the large electrical companies and public service corporations in the territory. The discussion was participated in by Mr. H. N. Muller, D. E. Burke, W. H. Acker, H. W. Storer, A. J. Glenn, F. F. Espenschied, O. M. Jorstad, H. A. Calderwood, Graham Bright, R. A. L. Snyder, and Bertrand P. Rowe.

The next meeting of the Section will be held on May 11, and a paper on electric lighting will be presented by Mr. C. E. Stephens, of the Westinghouse Electric & Manufacturing Company.

Reasonable Connection Relations*

By Wm. Crownover

It is hard to get farmers' companies to make connections on a reasonable basis, not because they are unwilling to pay for what they get, but because they must be taught that it costs something to equip and maintain a system which will render good service. And this, in many cases, they will not learn until they operate an exchange for themselves long enough to find out what depreciation means, and long enough to find out what a sleet storm, like the one we had this winter, costs.

Unreasonable connection terms furnish the underlying cause of nearly all the trouble telephone companies are experiencing. But in order to have reasonable connections, all parties concerned must be willing to learn what is right and submit to that which is fair. The question then arises:

WHAT IS FAIR?

First, we should not want any more ourselves than we are willing to give to the fellow at the other end of the transaction—reasonable prices for apparatus and construction material; reasonable wages for the employees; and reasonable interest for the investor; good service, and reasonable rates.

There should be one purpose and one plan in the Independent field, if we are to protect ourselves against the monopoly principle or practice that is trying to pierce the Shield that brought independence and liberty to the American farmer in the telephone world.

I more fully appreciate the red, white and blue on the Shield since I made a trip to Europe. I then learned that the most unreasonable feature concerning telephone connections was to have no connections at all, or to be in a condition where telephone connections were prohibited by a monopoly.

I know of no better illustration I could give of what I believe to be reasonable connection relations than to give you the experience of our own company. The Hudson Mutual Telephone Company was organized about eight years ago. We built our exchange and lines and started out, advancing the theory that all the companies around us should do likewise, pay their monthly assessments, and have free interchange of service between companies. This theory looks all right to the amateur. But we soon discovered that there was a flood of useless messages which increased operating expenses, and were detrimental to the service. We soon had to replace our switchboard with a larger one. We thought it necessary, and therefore bought a permanent home for our exchange. We found that this expense must be met in some way, and decided to go on a fair interchange or toll basis with the Corn Belt Telephone Company, with whom we do over eight per cent of our business. We met them with metallic toll circuits half way between Hudson and Waterloo, and half way between Hudson and Cedar Falls. We charge a ten cent toll, and divide the money equally every three months.

This method has proven perfectly satisfactory to us and I think to all companies connecting on this sort of a basis. The reason why I think this plan is as satisfactory to others as it is to ourselves, is that I do not hear of any trouble or complaint where this plan of doing business is used. When some fellow is not getting what belongs to him, you are very likely to hear about it.

We have rebuilt our entire system in town with cable, making it all metallic. I think we have the best system of any town of our size in the state. We are out of debt, and have been able to skip two assessments, while at the same time we have paid out about $1,000 for reconstruction in the last year, and our books the first day of January, 1909, showed over $600 in our treasury. These are facts, from experience, that cannot be disputed. There is an adjoining company which is still operating on the so-called free interchange basis, and its conditions are much different. It started in by collecting $35 per share for stock, the same as we did. But other assessments on the shares, for investment purposes, have been made, until now the shares have been raised to $60. Besides this, the company is in debt, and nobody likes to tell just how much; at least, nobody outside is able to find out just what the assessments are, for current expenses. Now there is one thing that is sure. We cannot build and maintain a telephone system for nothing. It must be paid for in the long run, either directly or indirectly. The company that is operating on the so-called free interchange basis and making large assessments which it adds to the cost of its shares, and treats as an increased value of its stock, should soon see that the name of free interchange under which it is operating is a delusion.

I believe there is only one way that is right, and that will give peace and harmony to all concerned. That way is the reasonable connection, or the square deal. It is a principle that all business must adhere to. It is the only principle that prompts one man to give to the other those things which he would like to have himself. There is no reason why a man should expect to take transportation over a telephone line free, any more than he should expect to take transportation over a railway line free. And there is certainly no reason why the man who travels seldom should pay fare for the man that travels frequently. I brought this forcibly to the attention of a stockholder who was close to the border of the so-called free interchange plan. We happened to meet at the office of our secretary when we were paying our toll bills. It was just at the time when we had skipped the assessments for switching, while at the same time rebuilding our exchange in town. He had only talked twice in three months, and had only twenty cents to pay. I had $3.20 to pay. It was easy for me to show him that if we had been on the so-called free interchange basis he would have had to pay an equal part of my tolls, while I would have derived the benefit of them. He soon caught the point, and is now a firm believer in the fair interchange, or toll basis. Whether or not he would have been willing to pay if the benefits and tolls had been in his favor and against me, I do not know, but this indicates the principle that must be carried out if we are to have peace. He also learned that fair interchange comes nearer being free service in the true sense when he has only twenty cents tolls to pay, at a time when the switching assessment is skipped, than to be under the delusive name of free interchange with a couple of dollars to pay for his switching.

There is no reason why farmers should expect other companies to switch their lines for less than cost. There will be just as much dissatisfaction and injustice from too low a rate as there would be if we were charged too high a rate. And contention is disagreeable to both sides. When farmers' lines are getting switching rates of fifty cents per telephone per month for the local exchange, and a ten cent toll rate to the neighboring exchanges in a radius of ten

*Abstract of a paper presented at the convention of the Iowa Independent Telephone Association.

miles, I consider that a good rate, and just as cheap as it is safe to undertake to give good service. Our company operates for service alone and not for profits. Our regular monthly assessment for switching for about eight years has been fifty cents. This assessment, or switching fee, and our half of the ten cent toll fees for talks to the adjoining exchanges, has furnished all the money we have needed and has made it possible for us to skip two of our assessments in the eight years. But we have not paid our officers or our directors anything for their time or their work.

Our shares were sold for $35. If we allowed ourselves 8 per cent, it would make our service cost about $3 per year more. A number of our telephones are rented. We charge $12 per year when we rent telephones.

While the fifty cents per month switching fee, as charged by our company for about 250 telephones, seems from our experience to have been a reasonable rate for what we have been aiming at, I could not say that it would be enough for larger companies, where expert management and help has to be paid for, and where interest has to be paid on the money that builds the lines, and I would not know just how high the switching rate on the rural telephone service should be made to make sure of a reasonably safe business basis. In fact, from what I have been able to observe, I doubt very much whether we have had sufficient experience or a long enough time from which to determine the relative cost of the sort of farmers' service we have been getting, and I am sure that the farmers are going to demand a better quality of service, and that the better quality of service is going to cost somebody more money to furnish it. I believe more time and more experience must be had before any person will be able to safely say just what the rate for farmer service must be. This is a point which I believe ought to receive more consideration than it is getting from the men who are demanding laws for the regulation of telephone service. I believe in regulation, but it must be reasonable regulation, and before it can be reasonable, it must be based on experience. The question in my mind is, Have we had enough experience? Is it possible for us to be as accurate in our judgments about this matter as we should be, and as we will be later? If not, should we not be lenient and go slow in our efforts to regulate by law?

I appeal to farmers' companies to connect with the Independents and to support them. The pioneer companies will remember that when we tried to get connections with the Bell company they did not care to have anything to do with us, but since we have developed the field the farmer's telephone is of much more importance than any other man's, and "The hand on the dial of progress would be set back one hundreds years" should the farmer's telephone be taken away.

The Bell telephone company is now offering inducements to the farmers' companies, not because it really wants to, but in order that it may cripple the Independent companies and retard the building by the Independents, of those copper toll lines which will speedily come if we stand together on the basis of reasonable connection relations, and thereby encourage capital to invest in that enterprise which is to unite all Mutual companies, and Independent companies, into one system with long distance service at reasonable rates.

While the monopoly company is offering to switch farmers' companies for what we know is less than actual cost, we should remember that this last proposition is just as unreasonable as their first, when they demanded twenty cents every time we talked. And we should not be deceived. We should not consent to be the fly that will walk into the spider's parlor. But we should apply the patriotic spirit for the Shield that has opened up the telephone field for the American farmer.

The Live Telephone Man.

In a short talk on "The Live Telephone Man," at the Ohio Convention, by Mr. Dillwyn Stratton, of Winona, he and the slow going, easy fellow were compared to the two frogs which, tradition tells, found themselves dumped into a farmer's milk can. The lazy fellow would croak, "We will drown," while the live fellow would squeak, "Keep paddling; keep paddling." When they got to the factory, the fellow who had kept paddling sat on a good chunk of butter he had churned from the cream, while the one that would drown did drown.

Courage is an essential; we need the kind who keep paddling where others fail. In fact, we may well compare the live telephone man to a live telephone. His points of contact must be good, and always bright. They must not be affected by heat or clouds of dust. He is then able to win the confidence of his employees, and his patrons have confidence in him, as they do in their telephones. Let these contacts be nothing short of unalloyed platinum.

He must have reserve power. His ringer must sound no uncertain signal, and never fail to respond to the most distant call. His transmitter must send forth his voice clear as a bell, with no tinny sounds, nor battery sizzling in unseemly accents over his wire. He must keep his batteries renewed to even voltage. His induction coils must give him multiplied power, with enough windings for reserved force, to equal the most unlooked for emergencies. His receiver must make so plain the messages that no misunderstanding shall be possible.

Last of all, we will equip him with a lightning arrester, lest a storm arise amongst his subscribers, and he need protection from the elements.

The telephone man who cannot be put out of commission by such outbreaks is worth much to his company. The directors do not have big bills in their annual report for trouble shooters, as he, their live man, may be depended upon to make collections, trim trees, or secure rights-of-way.

We may have ever so good an exchange, and fail if our management is out of repair.

A man with a fund of good sense and good humor will not find half so many obstacles as the fellow with a fearful heart who is always ready to say, "We will drown."

A New Use for the Telephone.

The telephone has been used for so many purposes that a real new use is a rarity. The following from the London, Ont., Can., *Free Press* is certainly an original and novel use of the instrument:

"The rural telephone plays an important part in bird shooting in the prairie provinces of Canada. There is an abundance of geese, ducks and prairie chicken in Manitoba, Saskatchewan and Alberta and the shooting is good clear up to the limits of the cities.

"Let a flock of geese be sighted on its way south from the breeding grounds on the shores of Hudson Bay or up the Yukon, or on its return north in the spring, and the telephone is brought into play to summon sportsmen for twenty miles around. The birds make overnight stops whenever they find water and the gunners spend most of the night in preparation.

"They dig holes deep enough to conceal a man and set decoys about thirty yards away. Experienced hunters will wait until the flock is passing and then shoot into the flock from behind. It has been shown that shot is more effective this way than when the attack is made from the front.

"The windier the day the better, for then the geese fly low. Most geese are shot when flying less than forty yards from the ground."

The Telephone in the Courts

Conducted by A. H. McMillan

Legality of Ordinance.

Would be pleased to get your opinion regarding the legality of our ordinance.

Last July our company was granted an ordinance in a nearby town. The president, secretary and burgess signed it, and it was duly published and advertised by cards. Within the thirty days required by section 7 we accepted the ordinance.

The council consists of seven members, six of which were favorable to the ordinance at the time of first and second readings. At the time of the final reading only four councilmen were present, three favorable and one against. The one opposed made a verbal objection against the passage, because of a rule they had that four must support a final reading in order to pass the same, but after due consideration the president asked the one councilman to put his objection in writing and file it later, and declared the ordinance carried and passed, after which it was duly signed, advertised and executed.

About January 15 we filed our bond for borough protection prior to starting work. February 14 they met and the president of the council declared the ordinance not legally passed and therefore null and void. The secretary returned to us a warrant for expenses and our bond.

We contend we have an ordinance. What is your opinion?

Their by-laws are not the result of an ordinance, simply adopted by motion. No written objection was filed and we were not notified regarding the annulment action previous to action.

We are inclined to doubt the validity of your ordinance. The by-law referred to did not need to be adopted with the formalities of an ordinance, and simple adoption by motion was sufficient. 28 Cyc., 333. If rules of the council are peremptory, proceeding had in violation of their requirements are void; State vs. Hoyt, 2 Ore., 246; but if merely directory, the proceeding without regard to their provision will not vitiate the action taken. Striker vs. Kelley, 7 Hill (N. Y.) 9; McGraw vs. Whitson, 69 Ia., 348; 28 N. W., 632. In the present case, it seems as though the rule was peremptory, its purpose being to require a vote of the majority of the council before an ordinance is adopted. Sometimes it is held that a council has suspended its own rules of order by failing to observe them. In re Broadstreet, 9 Kulp (Pa.) 37. Here, however, there was an objection, although not in writing, so we doubt whether it can be said that the council waived or ignored its rule. For a really reliable opinion on this subject, it would be necessary for the Editor to have before him the ordinance, the rules, the city charter and the proceedings of the council at this and previous meetings.

Sick Cow, Cow Doctor and Telephone Company.

Has anything like this been in the courts? Please give me some advice on the subject if you possibly can.

A party on a country line goes to a meeting of some kind, and comes back home about eleven o'clock at night, finds his cow sick (cow gave birth to a calf). He goes to the telephone and calls central; central answers him and rings the party asked to ring; after ringing several times and the party does not answer, the operator tells the party calling, "I guess everybody is in the bed at this time of night." (The party wanted was a COW DOCTOR.) The party claims that he called central several times after this and could not get an answer. The night operator does not remember anything about the call. There was a party on the line who heard the conversation. Anyway, the cow dies, and he wants the telephone company to pay him for the cow, and we refused. He said he would push it for all it was worth.

The line is a country line with eleven 1,600-ohm telephones on it. They pay us so much a drop to connect with us. Also the cow doctor lives on another country line, with about the same number of telephones on it.

Can they make anything out of a suit?

You describe what is certainly a distressing case. As cows are not very expensive, we advise a settlement. If the party can prove that he called central office several times, and got no answer, he would probably be entitled to damages for the loss of the cow unless you can show that the attendance of the "cow doctor" would have been unavailing to save the cow's life. A subscriber to a telephone company is entitled to get central at any time he wishes it, and we do not believe the courts would hold that, because the party called for did not answer the operator when rung, he might not have answered had he been rung at other times during the night. The case is upon the same principle as cases of a failure to use reasonable diligence to bring a party to a telephone when called over a long distance line. A recent case of that sort is Southwestern Telegraph and Telephone Company vs. McCoy, decided by the Court of Civil Appeals of Texas Nov. 21, 1908, reported in 114 S. W., page 387.

Telephone Wires and Railroad Crossings in Arkansas.

We are having trouble with a railroad breaking down our wires. The crossings are on 35-ft. cedar poles, which makes the crossing about 28 to 30 ft. high. The railroad people use a pile driver that they cannot let down. It stands about 35 ft. above the rail. Please let us know if we should put in new crossings or attempt to make the railroad company change their pile driver. On the main line of the road we have a right of way by condemnation. The decree specifies that our wire shall be 25 ft. from the rail. On the branch we have no right-of-way, but cross at a public road crossing, and were there before the railroad was built. We raised the wires to their present height, about 25 ft., at our own expense when the railroad was built.

Please let us know what is the proper course to pursue under these circumstances.

We think you should attempt to make the railroad company change the pile driver. The decree in your condemnation proceedings is binding upon both the railroad company and yourselves. If you compel the railroad company to change its pile driver so it can be used on the main line of the railroad, you will have no trouble on the branch line.

Refusing Connection for Suburbanites on Rural Line.

The town in which we operate has grown since it was incorporated and a number of houses are outside the corporation limits. We have always made it a rule to not allow people living in these houses outside the corporation limits to put telephones on rural lines, which are owned by the farmers, and which we switch at a very low rate. But we have put telephones in for them at the same rate we charge inside the corporate limits. Now a man whose farm adjoins town, and whose residence is near the corporation line, says he intends to make us let him go on one of those rural lines. Please advise us if he can force us to give him service on this line.

The rule that you have made not to allow people living in houses which are part of the town, but are outside of the corporation limits, to connect with your rural lines, is reasonable, and one that can be enforced. Therefore, the person you speak of is not entitled to service on such line.

Crossing Railroads in Tennessee.

We want to cross the railroad at a public crossing in town. Can we cross without the consent of the railroad company, or would it be the best to get privileges from the railroad company to cross?

It would be best to get permission from the railroad company to cross their track if you could do so without difficulty. However, we believe you would have the right to cross their track whether they gave permission or not. Section 1830 of the Code of Tennessee for 1896 gives the right of way to telephone companies to use the roads of the state. We suggest that you refer to that section.

Eavesdropping Admissible to Corroborate Testimony.

By a unanimous decision of the Appellate Term of the Supreme Court of New York, conversations over the telephone may be corroborated in court by a witness who "eavesdrops" over the wire. Justice Bischoff, who writes the decision, says that a new trial must be ordered for prejudical error in the exclusion of evidence by the defendants. "Unquestionably," says he, "a conversation overheard

between the parties whose voices are recognized by the witness may be proved and there is no good ground for distinction in principle between such a case and that of a conversation by telephone, which the witness overhears, where the actual connection between the instruments is shown in such wise as to identify the very conversation, and the persons holding the conversation are known."

Rimes vs. Carpenter, New York Supplement.

Court Refused to Interfere with Receiver.

Judge Evans, in the Federal court at Louisville, Ky., declined to allow the filing of the intervening petitions tendered by the Rural Home Telephone Company in the action of J. D. Powers, receiver of the Central Home Telephone Company, against the Kentucky & Indiana Telephone Company and the Owensboro Savings Bank and Trust Company. The reason assigned by the court is that the defendants had not been properly notified of the intended action of the plaintiff. The petition asked the court for an order restraining Receiver Powers from destroying the property of the Rural Home Telephone Company. The petition states that Mr. Powers had employed one L. C. Griffith, as an agitator to create dissension among the subscribers of the complainant. It also charged that Mr. Powers sent out a body of men and, without notice or warning, cut the wires of the Rural Home Telephone Company. Much of the property of the complainant was thus rendered worthless. The property of the Rural Home Telephone Company is valued at $47,000.

Practical Questions and Answers

Coil Winding.

Noting your answer to my query in the March 6 Telephony, I find that I should have stated that the circuit through the magnet will be closed 10 seconds every 10 minutes, for five hours each day. How long would three cells last, on the magnet of No. 20 wire? Would common wrought iron do for the core? How close together should the two ends of the U-shaped core be? Does this make any difference? How many times greater is the power of the magnet with two coils which you suggest than the magnet or core of a common spark coil used on a cigar lighter which is of about No. 16 cotton covered copper wire measuring .4 ohm, 8 ins. long, wrapped on a ¾ in. core of soft iron wire of about size No. 16?

Three dry cells might not be expected to last more than two or three months on that kind of service. The exact time could only be found by trial. Get Norway iron, if possible, though any good *soft* iron will do. The distance apart for the poles of the U-shaped core will depend largely on the nature of your work. Not knowing that, I would say make it about 4 inches from center to center. If too close together there will be too much magnetic leakage, and the coil will not pull as strongly as it ought.

Most cigar lighters have an open magnetic circuit in their coils. In this case the pull which they are able to exert on an armature is relatively small, just the ratio I cannot say.

Rewinding Magnet for Pole Changer.

I have a Sandwich pole changer which has been burned out. I want to rewind it to run on one cell type RR Edison cell. What size wire shall I use? How many ohms? The winding space is 1⅜ in. long, the heads 1 in. in diameter, and the core is of ⅜-in. diameter. There are two such cores in the magnet. Where shall I cut in the condenser? How shall I wire to get the contacts correct? I do not care for pulsating current, just the alternating.

If you wind both of the coils full of No. 24 black enam-

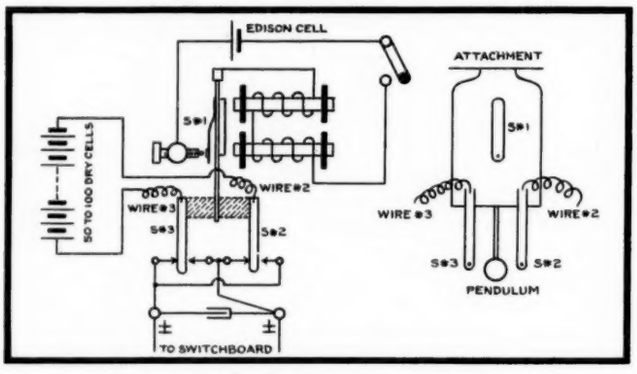


Fig. 1.

eled magnet wire and connect them in series you will get about five ohms, which is not far from correct. It will give you a little over a tenth of an ampere on one cell, Edison battery. Fig. 1 gives the plan of wiring for a Sandwich pole changer. The detail of the vibrator is shown at the right, while the connections are shown in the main diagram.

Loose Connection in Desk Stand.

Enclosed find diagram of an odd case of trouble in a common battery telephone. I had a partially open primary on lug No. 1, which permitted good conversation, but with a jar of the coil it would go open. It would then close only by putting battery

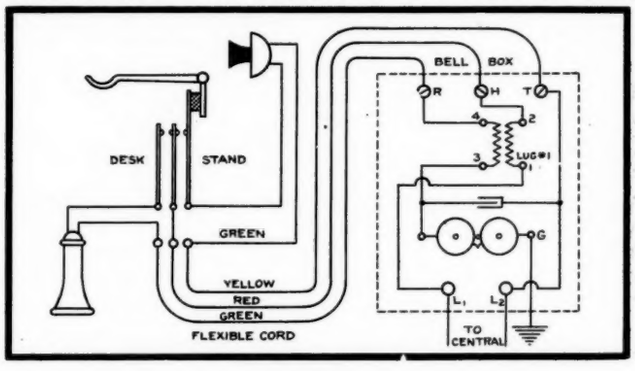


Fig. 2.

through the contact and at the same time jarring the transmitter. What action did the transmitter have in closing this circuit? Even the vibration of the voice was sufficient to cause the transmitter to close the circuit.

Where a loose connection exists it is very hard to state exactly what to expect. The contact between good conductors of electricity, such as copper, brass, nickel, etc., varies quickly from good to wide open with comparatively slight changes in pressure. It has also been observed that where a loose contact exists, it is the oxide on the surface of the two metals which makes the resistance high. It has also been found that the application of a sufficient voltage will break down the film of oxide, and allow good contact immediately afterward, for very low voltage current as well as the original high voltage. For example, a high resistance joint on a line can often be closed temporarily by ringing with a good strong generator. Fig. 2 gives the circuit of the telephone in which this loose lug was found. Evidently the closing of its high resistance by jarring the transmitter was due to extra current induced in the induction coil by the changes in transmitter resistance. There was some contact and some current, even when it would not talk.

Danger of Induction From A. C. Railway.

We are about to have an electric railway in our city and I wish to know to what extent it will interfere with grounded lines which run parallel to the proposed route for 2½ miles at one place and about 500 feet at anchor. The distance from high tension wires to telephone wires will be about 60 feet, where they

are parallel. The railway people will use a three phase system, 25 cycles, 33,000 volts a. c. on the high tension wire, and 600 volts on the trolley wire.

You may expect serious interference with your lines from the high-tension, 33,000-volt, 25-cycle system of the electric railway company. In order not to have such interference or induction on grounded lines, you will have to remove them to a distance many times 60 feet, probably a mile. The practical remedy, without moving your lines from their present location will be to make them metallic and transpose them. Grounded lines are very much more susceptible to inductive disturbances than metallic lines, and furthermore are incapable of being transposed.

After making them metallic, and transposing, you should have no difficulty in obtaining good service, but you will find it necessary to keep your maintenance at the highest point, not only throughout the exposure of 2½ miles, but throughout the entire length of each exposed circuit. The efficacy of transposition systems depends upon almost perfect electrical balance of the circuits—that is, the insulation of each wire should be practically perfect, no broken or missing insulators, no foliage or trees in contact with the wires; the resistance of each wire should be the same; wherever apparatus is connected from one wire to ground there should be dummy apparatus of the same electrical properties connected from the other wire to ground; wherever there is apparatus connected in series with one wire there should be dummy apparatus of the same electrical proprties connected in series with the other wire; the electrostatic capacity of each wire to earth should be the same; there should be no grounds on bridged apparatus except at the electrical center of the bridged circuit.

Even with these things accomplished in a practically perfect manner, you will find that when one of these exposed lines is connected to a grounded line, or to an unbalanced metallic line, it will become noisy, even though it was previously quiet. In other words, you will find that inductive disturbances, to be treated satisfactorily, will require your line maintenance and the balance of your metallic circuits to be high, not only on the exposed circuits, but on all circuits to which they may be switched in the course of business.

The transposition system should be laid out so as to eliminate both the cross-talk and the induction. Circuits next to each other are usually transposed every quarter mile with respect to each other; cross-talk transposition systems have been pretty well standardized and need not be explained here. The transpositions to eliminate induction are usually special in each case, and can be laid out only from a plan showing all the details of the telephone lines and the power circuits.

Ringing Over Iron and Copper Lines—Bridged Bells.

Please tell me your opinion of the following: We have a farmers line of No. 12 B. B. galvanized iron wire with 14 telephones on it. It is eight miles to the nearest telephone, and all beyond are within a mile of each other. Is there not more resistance on this line to ring through than on a line of No. 12 copper, 50 miles long, with one 500 ohm drop? Should not a Warner pole changer be able to ring down the drop on the copper line more easily than on the farmers' line? The farmers' line is grounded. Subscribers can ring "Central" easily enough, and ring each other without trouble; but they do not get the operator's ring strong enough. The line appears to be clear from grounds. The bells are of 1,600 ohms resistance. Please give me your opinion of the trouble.

Each of the 14 farmers' bells will not get as much ringing current as the single drop on the toll line. If your Warner pole changer gives 50 volts a. c., effectively, and assuming certain values of the properties of the bells and line, each bell will get about .006 ampere, which is just about enough to ring well. On the other hand the drop on the 50-mile copper line will get about .019 ampere, which is about three times as much as one of the bells gets. The reason is that, although the farmers' line is shorter than the copper line, and has less resistance, the current must be divided up among the 14 bells, while the drop on the copper line can get all that goes over the wire.

Certainly the Warner pole changer ought to be able to ring all the bells, and do it well. Doubtless your ringing battery is weak. If you put in 60 to 80 new dry cells of good make, and give the contacts on the vibrator the right adjustment, you will not have any trouble in ringing.

Telephone News

INDEPENDENT TELEPHONE CONVENTIONS

Arkansas, Little Rock, May 10,11; Indiana, Indianapolis, May 12, 13; Missouri, Kansas City, May 19, 20; West Virginia, Parkersburg, May 27, 28; Mississippi, Jackson, June 11, 12.

Rate Regulation in Los Angeles.

For the past two years the Home Telephone & Telegraph Company of Los Angeles, Calif., has been trying to obtain the same rates for service as charged by the Pacific (Bell) Telephone & Telegraph Company. The City Council has the power to fix rates to be charged for telephones and electricity. For some reason not clear to anyone concerned, the council has steadfastly refused to favor the Home company, although it was conceded by business men in general that it was at least entitled to the same consideration as the Pacific company, and a great many thought that, on account of the superior service of the Independent company, it should be allowed even more than its rival. It was contended that the rates of the Pacific company should be lowered to the same figures as the Home, but this was thought to be unfair to both concerns.

President Pease, of the council, together with several members, said it was unjust to make any discrimination against the Home company, that it was a local institution, its capital is at Los Angeles, and most of its stockholders are Los Angeles citizens and of the class of whom the city is proud. He said he had always considered it a grave injustice to the Home company that it had been forced by law to furnish the same service for less money than the Pacific company could demand. The action of the council in finally granting the increase, passing the ordinance a second time over the mayor's veto, was a victory for the Home company although it was not obtained without a struggle. The council had heretofore based its reason for discrimination in the rates on a difference in state and national connections, but it was pointed out that this motive does not now exist as the Home company reaches all the points reached by the Pacific company with which local business men desire connections. Both companies carry practically the same number of subscribers.

Rates for both companies now are, business main lines

$5.00, residence main lines $3.00, extensions $1.00, exchange trunk lines, first $8.00 additional $6.00. This is a raise for the Home company of $1.00 on residence telephones and $2.00 each on trunk lines.

Although the raise granted will undoubtedly cause a slight increase in the Home company's revenues, it will make a greater difference in its securities which immediately showed a gain of from one to five points.

The Oklahoma Commission Rehearing the Enid Rate Case.

The Oklahoma Corporation Commission is taking additional testimony and rehearing the Enid telephone case. The Supreme Court several weeks ago issued an order requiring the Commission to certify to the court the evidence and its findings upon which it bases the order requiring the telephone company to put back in effect the old rates. The Commission's stenographer lost some of the testimony taken after the Commission had made its order, and now it is necessary to have a rehearing of the case. The case was tried by the Commission last fall and a thorough examination lasting ten days. Evidence was also taken from several other telephone companies as to the cost of operating a system. The Pioneer Telephone Company has put up a $10,000 idemnity bond to the State and is charged the new rates, which were effective last October. They are $3 per month for office and $2 and $2.50 for residence telephones, while the old rates were $2 for office and $1.50 for residence telephones.

Jamestown, N. Y., Telephone Co. Applies for Increase in Rates.

In an attempt to secure from the city of Jamestown, N. Y., a raise in rates, the Jamestown Telephone Company has, by its methods, shown commendable courage, honesty and frankness. It has freely set forth the reasons why the increase is necessary, and reported the true valuation of its plant, as appraised by disinterested experts chosen by the city council. It is probable that the experts have led the company astray by stating that 3½ per cent is a proper charge for depreciation, as the best authorities agree on from six to eight per cent, but this is no reflection on the method adopted by the telephone company.

Following is an abstract of the letter addressed to the council by the telephone company:

"A committee of which Alderman Sprague was chairman was appointed to confer with officials of the Home Telephone Company relative to an appraisal of the plant. The American Appraisal Company of Milwaukee, Wis., was agreed upon, their services secured and we herewith submit their report.

"The committee also requested that C. A. Okerlind, ex-city auditor, be employed to make a complete and thorough audit of our books for the purpose of ascertaining whether or not the Home Telephone Company was justified in asking for an increase in its rates for telephone service. We herewith submit Mr. Okerlind's report.

"The report of the American Appraisal Company gives the cost of the plant as $286,045.41. The gross annual earnings, as shown by Mr. Okerlind's report for the year 1908 were $46,890.33 and the gross annual expenses (less interest on investment) were $32,474.60, leaving a net revenue of $14,415.73 from which interest and depreciation must be deducted. Six per cent interest on the valuation of the plant, as made by the appraisal company, would amount to $17,-162.42 per annum. Three and one-half per cent on this valuation for depreciation would amount to $10,011.58, or a total for interest and depreciation of $27,174. Deducting from this amount the net earnings, as shown by Mr. Okerlind's report, would leave a net annual deficit of $12,758.27.

"Depreciation is an important item to be taken into consideration in a telephone plant. Authorities differ as to the exact amount to be set aside each year to take care of renewals, some claiming as high as 6 per cent and others as low as three and one-half per cent should be charged off annually on the total cost of the plant, to cover physical wear and decay. Based on past experience of this and other operating telephone plants, we believe that three and one-half per cent on the cost of the Home telephone plant will provide a sum sufficient to take care of renewals and replacements, including a new switchboard which will soon be necessary by reason of the rapid deterioration of the old board.

"The plant of the Home Telephone Company was constructed for an ultimate capacity of two thousand subscribers and we have now connected over two thousand six hundred instruments, which has resulted in congested lines and impaired service.

"To properly take care of our subscribers and provide for those who have made application for service, it will require an outlay of several thousand dollars; an addition to our switchboard, new cable, new wire and other material being necessary for the installation. In order to provide money for this work, the stockholders must be assured of a reasonable interest on the additional capital required.

"Based on six years' actual operating experience, the rates for telephone service stipulated in the franchise, have proven entirely too low, and that the company cannot long exist on the present revenue, is clearly shown by Mr. Okerlind's report.

"The Bell Telephone Company operating in the same field is unrestricted as to rates and is allowed to charge $48 for individual line business telephone, while the rate of the Home Telephone Company for the same service is but $30. The Bell Company's lowest rate for a two-party residence service is $24, while the Home Telephone Company's rate is but $14.

"In September, 1907, this company was under the control of people residing in Rochester. They held the majority of the stock of the company and had borrowed of one of the banks of Rochester a considerable sum of money and put up a majority of the stock of this company as collateral together with a large amount of the bonds of the company. A note which was given for security and put as collateral was not paid and the bank threatened a foreclosure of the pledge. The Rochester people had entered into a contract by which this company was to be transferred to the Bell.

"Believing in the advisability of having some competition in the telephone business in this city, several persons residing here objected to this transfer to the Bell, and, in order to prevent it, were compelled to resort to legal methods and also to put up a large amount of money, take over these securities and pay up the indebtedness to Rochester which the Home Telephone Company was owing there of about $30,-000. The only method was employed which could have been employed in preventing the transfer of this company to the Bell.

"This deal was consummated with the full knowledge that the rates for service in vogue were inadequate, but believing when the true condition of the affairs of the company was properly presented to the mayor, common council and people of Jamestown, they would sanction an increase in rates sufficient to cover depreciation and a reasonable interest on investment, thus insuring telephone competition in Jamestown.

"We have given both the American Appraisal Company and Mr. Okerlind every assistance possible in arriving at the true condition of the affairs of our company and now respectfully request that you give these reports fair and impartial consideration and grant us such rates as will, in your opinion, allow a reasonable percentage on the investment, and a sufficient sum to properly maintain and operate the plant.

"At the present time there are upwards of 300 applications for telephone service on our books, which we are unable to take care of from lack of funds, and unless a reasonable interest on our investment is earned and paid it will be impossible to secure the necessary funds for these extensions.

"We herewith submit a schedule of rates for your consideration. These rates, if granted, will provide a sum sufficient to pay the interest on our investment and properly maintain and operate the plant. If this increase is granted, the stockholders of the company have given their assurance that the necessary funds for taking care of the new subscribers will be put into the business at once.

SCHEDULE OF RATES.

Single line business telephone per annum	$36.00
Two-party line business telephone per annum	30.00
Single line residence telephone per annum	24.00
Two-party line residence telephone, per annum	18.00
Four-party line residence telephone per annum	16.00

Respectfully, HOME TELEPHONE COMPANY,
By John H. Wright, General Manager.

It is an agreeable fact that the disposition of the council and people is apparently in accord with the straightforward policy of the telephone company. The Jamestown *Journal* says, editorially:

"The discussion among the aldermen and members of the committee of investigation shows clearly that there is no disposition to deal unjustly with the Home Telephone Company. * * *

"It would seem, in the interest of all concerned and the best public policy would be for the aldermen to determine, after the examination which is to be continued is completed, just what fair and equitable rate for service should be and revise the contract under which the company operates here, to meet that rate. Whether or not the schedule which Manager Wright presents is the most favorable that can be given with safety to the concern, is for the aldermen to determine, and there is every reason to believe that they will do so in a spirit of fairness and with a view only to that which may prove of the greatest benefit to the people of the city."

Likewise the Jamestown *Morning Post* shows a commendable spirit of honesty and fairness in the following significant sentences of its editorial comment:

"The aldermen should give careful consideration to this report of the appraisal and of the revenues of the company, with a view to determining what is best for the city. If a public service corporation is losing money, and continues to lose, it cannot permanently continue business. Jamestown welcomed telephone competition and there is no sentiment in favor of permitting a monopoly to be restored. * * * The subject presents great difficulties, but it may be assumed that both aldermen and people wish to deal justly with the company."

Florida Telephone Convention.

The annual meeting of the Florida Telephone Association was held at Orlando, April 23.

Among the subjects discussed were pole preservation, division of tolls, and uniform accounting. Mr. E. E. Voyle, Ed Scott and W. W. Lathrop were appointed on a committee to investigate and recommend a system of uniform accounting and division of tolls at the next session.

The following members were present:

W. G. Brorein, of the Peninsular Telephone Company, Tampa; E. E. Voyle and C. C. Voyle, Gainesville; F. A. Whitney, DeSoto County Telephone Company, Punta Gorda; W. B. Merck, Eustis Telephone Company; O. B. Dees, Mayo; G. E. Coon, Jensen; W. H. Reynolds, Orlando; G. C. Friessell, Miami; P. W. Butler, Leesburg; H. R. Frazee, Petersburg; W. W. Lathrop, Bradentown; G. E. Gay, Palatka; G. H. Fernald and Mr. Mahoney, Sanford; H. H. Witherington, Apopka; J. B. Steinmetz, Clay Springs; Dr. Curtis of Orange Heights. Several exchanges were represented by proxy.

The folowing new members were elected: T. A. Whitney, of Punta Gorda; G. A. Coon, Jensen; G. E. Gray, Palatka; M. S. Allen and D. M. Laird.

Ohio Independent Long Distance Returns for March Break Record.

The United States Telephone Company of Cleveland, Ohio, is reported to have had the heaviest business for March of any month in its history. This is an excellent record in the face of the fact that the heavy sleet and ice storms in February damaged the company's wires and made operation more difficult for some time thereafter.

The Cuyahoga Telephone Company is preparing to erect a new branch exchange in the east end of the city to take care of a lot of business that has been waiting and relieve some of the other branches which have been overloaded. The building will not be large, but will have an attractive exterior to fit into the residence surroundings where it will be located.

Second District Meeting of the Indiana Association.

The reports of the various telephone men at the annual meeting held at Fort Wayne, Ind., last week, showed that the various companies in the nine counties comprising the second district of the Indiana Telephone Association are doing a good deal in the way of erecting toll lines. It is said that within another year Fort Wayne will have long-distance connections with a great many more cities within a radius of fifty miles.

Officers of the second district were chosen as follows: William L. Moellering, general manager of the Home Telephone Company, re-elected president, and Martin Umbach, now traffic manager for the local Independent company, secretary and treasurer, vice E. M. Popp, resigned. G. E. Spake, of the Monroeville company, presided at the meeting.

Among those present at the meeting were Harry Wilder, of Angola; A. A. Adams, of Columbia City; Virgil A. Geiger, of Churubusco; J. B. Mager, of Garrett; W. O. Taylor, of Andrews; E. E. Richard, of Roanoke; A. T. Neizhart, of Albion; Harry Inks, of Ligonier; F. W. Schirmeyer, of Decatur; Dr. Asty, of Geneva; G. E. Spake, of Monroeville; A. Klopfenstein, of Leo; John Emrick, of Huntertown; John Fackler, of Hoagland; R. H. Minnich, of Nine Mile, and M. A. Kehrer, of Butler.

Dallas Druggists Refuse to Install Pay Telephones.

At Dallas, Texas, an attempt has been made to put drug store telephones for the use of the public on a measured service basis, and charge five cents per call. This matter was taken up at a conference held in the auditorium of the Chamber of Commerce a few days ago between L. D. McLean and J. F. MacDonald, representing the Southwestern Telegraph & Telephone Company, and members of the Dallas Druggists' Association. Some of the newspapers made a protest that "it would cost the people of Dallas a lot of money," and the druggists refused to sanction the plan. Of course the burden of paying for this free service will now fall back on the telephone subscribers, who have always borne it, while the other people have done their talking free.

The justice of the measure is shown by the number of calls which are now handled free from various drug store telephones, running up to 180, 145, 183, etc., by actual

count. It is good policy to make the people who get the benefit of these stations pay the bills, and where this plan has been adopted it works in a manner gratifying alike to the druggists, the telephone company, and the telephone subscribers—in fact, to all but the class of people who want to get something at other people's expense.

Program of the Missouri Convention, May 19, 20, Coates House, Kansas City, Mo.

Following is the final program for the convention of the Missouri Independent Telephone Association:

WEDNESDAY, MAY 19TH.

Address of welcome—Hon. T. T. Crittenden, Jr., mayor of Kansas City.

Response to address of welcome—M. L. Golladay, president Missouri Independent Telephone Association.

Reading of minutes of last convention; reports of committees; appointment of regular and special committees; presentation of new business.

AFTERNOON SESSION, WEDNESDAY, MAY 19TH.

"Cost of Farm Service," D. C. Clark, Lockwood.

"How to Reduce Depreciation," H. C. Todd, Maryville.

Address—E. H. Moulton, President International Independent Telephone Association.

"From the Subscriber's Viewpoint," C. H. Petty, Nevada.

"Advantages of Toll Line Development by Local Companies," A. F. Adams, Joplin.

"Telephonically Speaking, How About It?" Kansas, Nebraska and Iowa, by their presidents.

WEDNESDAY EVENING, MAY 19TH.

Beginning promptly at 7:45 p. m. there will be a smoker under the leadership of the president and a committee having in charge a question box in which every one is requested to deposit written questions to be brought up for general discussion; the idea being to make this session an educational one, affording opportunity for discussion of technical subjects and experiences which will be of inestimatable value to every one.

THURSDAY, MAY 20TH.

Secretary and Treasurer's Report, G. W. Schweer, Windsor.

"The Business Man's View of Long Distance," Houck McHenry, Jefferson City.

"The Independent Telephone Publisher and Printer," Stanley S. Lichty, Editor, Western Telephone Journal, Vinton, Ia.

"Collecting and Its Success in One Exchange," S. D. Thompson, Cameron.

"The Cost of Operating a Mutual Company," J. N. B. Shelton, Mt. Vernon.

THURSDAY AFTERNOON, MAY 20TH.

"In Union There is Strength," W. B. Scruggs, Harrisonville.

"Field Notes," W. R. Barkdull, traveling secretary, Windsor.

Report of committees; miscellaneous business; election of officers; adjournment.

THURSDAY EVENING, MAY 20TH.

Banquet, 7:00 p. m.

Dr. S. T. Neill, Toastmaster.

Toasts.

"Our Future Prospects," Hon. H. D. Critchfield, Chicago.

"My Opinion of Mutuals—With Apologies," Wm. D. Reynolds, Pattonsburg.

"The Traveling Man's Troubles," Nelson J. Roth, Chicago.

"Long Distance for Everybody," C. J. Myers, Kansas City.

"The Lawyer as a Telephone Stockholder," Claude J. Bain, Trenton.

"The Printer's Art in Independent Telephony," Franklin H. Reed, Chicago.

"Telephone Reminiscences," Judge H. G. Orton, Princeton.

Missouri telephone men are to be congratulated on the progress they have been making, and so many valuable and practical features—to say nothing of a good time—have been laid out for this convention that it is likely to be the biggest kind of a record breaker. Every Independent officer and stockholder in the State owes it to himself to attend.

Kellogg Company Under Control of Independent Officers.

The Kellogg Switchboard and Supply Company, as a result of the persistent fight so courageously carried on by Mr. Francis W. Dunbar and his associates, is now finally and legally restored to the position of a prominent Independent manufacturer of telephone equipment and supplies.

In obedience to the final decree of the Illinois Supreme Court in the case of Francis W. Dunbar et al. vs. The American Telephone & Telegraph Company et al., as published in TELEPHONY Feb. 27, 1909, the American Telephone & Telegraph Company, on April 20, 1909, restored to its owner each and every certificate of stock of the Kellogg Switchboard and Supply Company.

On Tuesday, April 27, 1909, the stockholders of the Kellogg company met and elected the following Board of Directors:

Milo G. Kellogg, Francis W. Dunbar, Kempster B. Miller, Leroy D. Kellogg, J. B. Edwards, James G. Kellogg, Wallace L. DeWolf.

It is understood that Mr. DeWolf, who managed the company while it was under Bell control, during the period of litigation, was elected a director by cumulative voting of their shares by himself and a very few other stockholders, who had been in sympathy with his management and who, from the size of their holdings, are entitled to one representative on the Board of Directors.

The directors elected the following officers:

President, Milo G. Kellogg; vice president, Leroy D. Kellogg; secretary and treasurer, Seymour Guthrie; and the following executive committee: Leroy D. Kellogg, Francis W. Dunbar, J. B. Edwards.

Arkansas Convention at Little Rock, May 10, 11.

The convention of the Arkansas Independent Telephone Association is set for May 10 and 11.

The first day of the convention will be largely devoted to meetings of committees, with a banquet at 8 p. m. at the Marion Hotel. The program for the second day, Tuesday, May 11, is as follows:

10:00 a. m.—Convention called to order.

Address of Welcome, Hon W. R. Duley, mayor of Little Rock.

Response, F. W. Tucker, of Little Rock.

Secretary's Report, D. B. Anderson, Ozark, Ark.

Treasurer's Report, H. L. Bernard, Russellville, Ark.

AFTERNOON SESSION.

Assemble at 2:00 p. m.

Address, "Advantages and Disadvantages of an Automatic Telephone Plant," S. A. Daniels, Jonesboro, Ark.

Address, "Development of Toll Territory," U. T. Stuhl, Siloam Springs, Ark.

Address, "Benefits of Organization of the Independent Telephone Operators," Conrad Elskin, Paris, Ark.

Address, "Trials and Hardships of Pioneering in the Independent Telephone Field," P. C. Ewing, Little Rock.

Address, "How to Get All the Independent Operators Interested in the Association," W. J. Savage, Warren, Ark.

Other papers and discussions.

Report of Committee on Resolutions.

Report of Special Committees.

Report of Nominating Committee.

Election of Officers.

New and Unfinished Business.

The committees appointed for the meeting are as follows:

Entertainment—P. C. Ewing, Little Rock; E. R. Winn, Bald Knob; E. H. Glenn, Batesville; W. L. Caldwell, Benton.

Reception—E. R. Winn, Bald Knob; I. M. Bellamey, Altheimer; H. J. Runyan, Arkadelphia; Joe Brown, Atkins; H. L. Rought, Batavia; C. H. Martin, Black Rock; W. J. Broom, Bono; W. P. Richie, Camden; J. E. Tunis, Carlisle; Dr. K. E. Hudson, Charleston; W. R. Hayden, Dardenelle; W. R. Welsh, Duvall Bluff; Dr. Boswell, Dewitt; D. A. Linton, Emerson; J. C. Wilson, Evening Shade; U. D. Wasson, Gentry; E. L. Hogle, Gillham; J. I. Potter, Gravette; W. E. Trower, Green Forest; N. L. Donehue, Harrisburg; Dr. H. L. Routh, Harrison; C. C. Price, Hardy; E. K. Hathaway, Hazen; Chas. McKee, Hope; W. G. Graham, Jacksonville; S. A. Daniels, Jonesboro; R. L. Morris, Magnolia.

Registration—U. T. Stuhl, Siloam Springs; L. M. Hynson, Mammoth Springs; W. D. Carpenter, Marmaduke; E. E. McMurry, Marvel.

Finance—W. J. Savage, Warren; I. D. Jones, Mena; J. F. Maxey, Ozark; W. C. Conatser, Ozark; W. H. Felker, Mulberry; E. A. Farris, Mt. Home; E. L. Horton, Newcastle; G. W. Decker, Newport; W. J. Driver, Osceola; Conrad Elskin, Paris; H. H. Brown, Paris; J. S. Harris, Perry; L. C. Moore, Piggott; T. S. James, Pine Bluff; W. T. McCormick, Prairie Grove; J. H. McDaniel, Prescott; J. R. Hafford, Rector; B. M. Welton, Redding; Joseph Brown, Russellville; R. M. Drummond, Russellville; R. A. Ward, Searcy; I. Thacker, Stuttgart; Sam Tuggle, Sulphur Rock; J. W. Seay, Walcott; O. A. Arnold, Waldo; A. J. McDevitt, Walnut.

The present officers of the Association are: President, A. E. Boqua, Fort Smith; vice president, E. R. Winn, Bald Knob; secretary, D. B. Anderson, Ozark; treasurer, H. L. Bernard, Russellville.

Cumberland "Gets Even" with Dr. Irwin, of Louisville.

Dr. J. W. Irwin, of Louisville, Ky., last month filed suit for a temporary injunction against the Cumberland Telephone & Telegraph Company, alleging that the defendant company had doubled his rate at his residence, making his bills $24 a quarter, instead of $12 a quarter, as formerly. He alleged discrimination, and asked that the temporary injunction, if granted, be made permanent.

Dr. Irwin alleged that during the recent controversy between the Home Telephone Company and the defendant he took the side of the Home Telephone Company, and that he believes it is on this account the rate has been doubled by the Cumberland Telephone and Telegraph Company. He says that he has the Home telephone in his office and the Cumberland in his residence, and that he believes the latter is charging him a business rate for this reason.

Judge Shackleford Miller granted a temporary restraining order to prevent the collection of $24 a quarter or the removal of the telephone from Dr. Irwin's residence.

Saskatchewan Government Buys Bell Lines.

The Bell Telephone Company is now extinct in western Canada between the Great Lakes and the Pacific Coast, the government of Saskatchewan having finally decided to purchase the company's system in that province. The price paid was $367,500 and there is some $10,000 due the province in unearned rentals. The transfer took place at midnight April 30-May 1. The company owned thirteen exchanges in the province and 469.4 miles of long distance line. Some people are of the opinion that the price paid was too high, but it is pointed out that the system is more modern than those in either Manitoba and Alberta, which were also purchased from the Bell Company. At Regina there is the most modern telephone exchange in western Canada, while several of the others compare very favorably with those in either Albertan or Manitoban cities. Saskatchewan will at once engage in a most progressive campaign of telephone construction, under the direction of Francis Dagger, the expert employed by the province.

Good Cuyahoga Report for March.

The March statement of the Cuyahoga Telephone Company, of Cleveland, has greatly pleased Ohio investors. It is the first statement containing the enlarged charge for renewals and maintenance, amounting to 23¼ per cent of the gross receipts. For the month this sum amounts to $17,706.12, and after making the actual expenditures for account of this fund there was left a reserve for future renewals of $5,002.17. During March the company shows a substantial increase in gross, a very small reduction in operating expenses, and a very small increase in interest. The preferred stock dividend remains the same. The reserve for renewals has increased $2,500. Even with this enlarged increase in the renewal fund the surplus is about $360 above the surplus for March, 1908. Following is the statement:

Gross	$69,037.24	$71,854.28
Expenses	33,589.75	33,509.00
Net	35,447.46	38,345.28
Interest	11,250.00	11,283.33
Preferred dividend	7,186.75	7,186.75
*Res. for renewals	2,500.00	5,002.17
Surplus	14,510.71	14,873.03

Poverty Pleas No Good Before Indiana Tax Board.

Representatives of Indiana telephone companies appeared before the Indiana State Tax Board a few days ago and argued against any increase in the assessment for taxation. In many cases a plea was made for a material reduction, on account of the destructive storms which occasioned the expenditure of thousands of dollars for repairs and restoration. Over-capitalization in some instances was pleaded, as was also depreciation, high cost of labor, material and equipment, etc. Unfortunately for the success of the pleaders, the companies' reports invariably show that they had increased their earnings and their net profits were greater than for the previous year. The Tax Board figures that the companies all made good money last year.

Cumberland Company Fined for Violating Mississippi Anti-Trust Laws.

In the circuit court at Meridian, Miss., following the hearing and arguments of attorneys in the ouster proceedings of the state of Mississippi against the Cumberland Telephone & Telegraph Company, the defendant company was found guilty of violating the anti-trust laws of the state and was fined $2,500 by Judge John L. Buckley. Mr. J. B. Harris, of Jackson, counsel for the Cumberland company at once gave notice that he would ask for a new trial.

The charge against the Cumberland company arose from its absorption of a competitor, the Meridian Telephone Company, over seven years ago, in violation of the anti-trust laws of the state.

In the trial of the case the state of Mississippi was represented by City Attorney C. T. Williamson, of Meridian, and Attorney General Stirling, of Jackson. The telephone company was represented by Mr. J. B. Harris, of Jackson.

Trading on Aggressiveness.

The following is an interesting quotation from the New York *Sun* of April 24:

"Telephone securities have been more active this week than at any other time since the more important trading in them began to shift from Boston to this city. Very likely at no time in the company's history has its bonds and stock been so actively dealt in and so much fancied in strong bank-

ing quarters here. Boston's interest in the company is still large, but the New York interest has increased much more rapidly in recent years than has Boston's, and this change is shown in the policy of the company which is more aggressive than was formerly the case. At no time since the expiration of the Bell patents, it is reported in the trade, have the various Bell companies displayed such an aggressive attitude toward the Independent companies in important sections."

If this means anything at all, it means that local agents, and publicity makers of the Bell telephone company who talk of friendly feeling and co-operation in relations with Independent companies are not following the true policy of the organization. At home, where it gets its money, the corporation talks of being aggressive toward Independents.

The moral for the Independents is that an aggressive campaign against their competitor will strengthen their own securities.

Advertising Which Has the Personal Element.

An effective method of attracting attention to a valuable improvement was recently practiced by Mr. Leon Spencer, manager of the Peoples Home Telephone Company, Gainesville, Texas. A letter describing a newly installed selective service was mailed to every subscriber of the competing company. The letter, neatly typewritten beneath the company's letter head, and the Independent shield, is as follows:

Mr. John Henry Jones, City.

Dear Sir:—Answering your inquiry of the 10th inst., regarding our new selective ringing, four-party line, residence (only) telephones, will say: Our rate for them is $1.00 per month.

No, unlike the old-style party line telephone, "a selective ringing telephone rings only when you are wanted." No two, three, four nor five rings to them.

They will meet your every requirement. Also reduce your present residence telephone bill $1.00 per month.

For further information; come to our office (located on South Dixon street) or call No. 200. Yours truly,

PEOPLES' HOME TELEPHONE COMPANY,
Leon Spencer, Manager.

This is an effective bit of composition, and because it is concise, and appeals both to the desire for good service and for economy, it aroused prompt interest. The principal novelty, however, was in the method of attracting attention in such a way as to provoke an immediate reply. As Mr. Spencer says:

"While attempting to devise something which would tend to attract more than the usual attention, it occurred to the writer that to carefully 'mix up' letters and envelopes, enclosing John Jones's letter in an envelope addressed to Frank Brown, and Frank Brown's letter in an envelope addressed to Sam Smith, etc., etc., would have the effect of causing them to believe that, by a mistake of ours, they had each received a private letter intended for another person.

"And from the numerous and various ways in which we have been notified of our error (?) it seems that we did not fail in our purpose."

New Pacific Bell Bonds Held Largely in the East.

Pacific coast investors and telephone users are naturally interested in the evident lack of local confidence in the securities of the Pacific Telephone & Telegraph Company (Bell). Although reports in the local papers state that the latest issue of $16,000,000, 5 per cent, 30 year first mortgage and collateral trust bonds was over subscribed, they also state that they were issued by J. P. Morgan & Co. at 95½, and that four-fifths of the bonds are held in the East. Figuring in the usual underwriter's profit, this means that the Pacific company will have to earn nearly 8 per cent on these bonds for the benefit of Eastern holders. As over half the company's $18,000,000, 6 per cent preferred stock, and of its $18,000,000 common stock, on which no dividends are paid are owned in the East, the company is at a decided disadvantage, in comparison with its locally owned Independent competitors. The increasing favor with which the local Independent companies are regarded is shown by the fact that early in 1907 $10,000,000 bonds under the same authorization as those recently issued were sold to a California syndicate, and subsequently offered to investors around 102½. Now these same California investors are taking the securities of Independent companies, and forcing the Bell organization to take its bonds back East, where the stock is held, and sell them at 95½.

Baltimore's Opinion of Unification.

In an editorial published April 15, the Baltimore, Md., *News*, says:

"There is dissatisfaction here now with the apparent intention of the company to do away with the Maryland telephone and thus force all users to take the limited service furnished by the Chesapeake and Potomac. When a situation of this kind arises we have a demonstration of the helplessness of the public. It has no way of knowing whether its interests are injuriously affected by the change. It does not know that it could do anything to prevent the change being made. It must take the company's explanation and grin and bear whatever comes."

Perhaps the time will come when a certain class of telephone companies will learn that buying out a competitor is synonymous with purchasing a burden of public discontent. If the purpose of monopoly were merely the earning of reasonable returns, would a public service corporation deliberately put itself under the ban of general disapproval?

Subscribers at Suffolk, Va., Stand by Independent Exchange After Fire.

The people of Suffolk, Va., are appreciative of the value of the service offered by the Atlantic Telephone Company, of which Mr. W. N. McAnge is president. The recent fire caused a heavy loss, but Mr. McAnge lost no time in placing, at different parts of the town, stations in which operators and messengers were in attendance, so that messages could be sent without great delay. Work will be rushed to prepare the damaged building for new equipment, and it is expected that within a very short time, considering the extent of the damage, a new switchboard of a modern and efficient type will be working and give better service than ever.

Nebraska Telephone Men Buying Automobiles.

Nebraska has been demonstrating in various ways during the past few years that it has wide awake and decidedly progressive telephone managers. The Independent telephone companies, while giving good service at low rates, are prosperous, and their officers are equally so. The latest indication of prosperity and a progressive spirit is furnished in the delivery of a carload of automobiles at Norfolk for the use of Independent telephone men connected with the Norfolk Long Distance Telephone Company. Four new machines will be used, respectively, by Otto Fuerst, manager of the Madison plant; W. M. Fuerst, manager of the Battle Creek plant; Ralph Fuerst, wire chief, Battle Creek, and W. J. Stadelman, general manager, Norfolk.

American Express Company Reinstates Independent Service At South Bend.

After finding out that it could not transact its business over the Bell lines exclusively, and that it was losing many times the price of the Independent telephone, on account of not having that connection, the American Express Company has restored the service of the Home Telephone Company at its offices at South Bend, Ind. The Independent telephone at Janesville, Wis., has recently been restored for similar reasons.

Telephone Patents

Conducted by Max W. Zabel

DRY BATTERY.

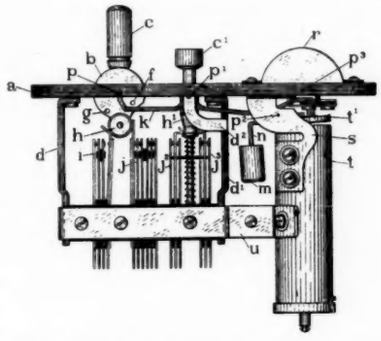
W. S. Doe, Jersey City, N. J., patent 917,560, April 6, 1909.

This dry cell has an annular chamber provided around its top, but insulated from the carbon. Holes are provided in the bottom of this annular chamber, which connect directly, through the interposition of the paper lining, with the active material in the battery. It is designed, through the agency of this chamber, to permit the exciting fluid, which is collected when the battery is in use, to pass into this annular chamber, and to remain there until the battery is again disconnected, at which time this active fluid may again be absorbed by this active material, and the battery more promptly restored to its normal condition.

SWITCHBOARD SIGNAL.

Oscar M. Leich, Rochester, N. Y., patent 918,682, April 20, 1909, assigned to Stromberg-Carlson Tel. Mfg. Co.

This invention contemplates a combined clearing-out drop and operator's key. When clearing out, the armature t' of the drop t operates the signal within the casing r, and the operator, when operating the key c to the listening posi-



tion, by means of the pin f and lever k, restores the drop to its normal position. The lever k is hinged at t'. Further details will be apparent from the illustration.

TELEPHONE PAY STATION.

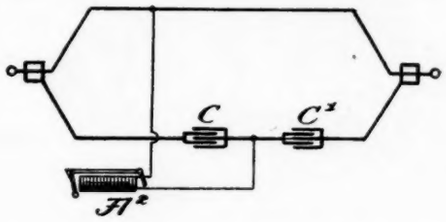
G. A. Long, Hartford, Conn., patent 917,742, April 6, 1909, assigned to the Gray Telephone Pay Station Co., Hartford, Conn.

This telephone pay station has means which permit of two circuit connections being completed in the telephone box when a signal is initiated. Thus, it is necessary to insert a coin, and at the same time to remove a receiver before "Central" can be called. The central office operator, if the party called for be busy, will tell a subscriber to hang up his receiver, and this releases the clearing out lamp. A receptacle receives the coin, and underneath this receptacle is a plate on which the coin is deposited. The coin can be delivered to the coin box by the operator, or released back to the subscriber by operating an electromagnet in either one direction or the other. When a coin depresses the movable plate under the receptacle an arm is also depressed, thereby closing one break in the electrical connections.

TELEPHONE SYSTEM.

R. H. Manson, Elyria, Ohio, patent 918,566, Aprli 20, 1909, Assigned to the Dean Electric Company.

This invention contemplates a cord circuit for magneto exchanges, so that when ringing off from a single line which is connected to a party line, the clearing-out drop will operate without ringing a bell of the party line. One form of the arrangement is shown in the illustration in which the clearing out drop A^2 is connected between the cord conductors, having condensers C, C' on opposite sides of the connection. Thus, one of the condensers is in series with



the drop when clearing out, and the other condenser offers additional impedance to prevent the flow of current over the other line.

INDICATOR FOR SWITCHBOARD.

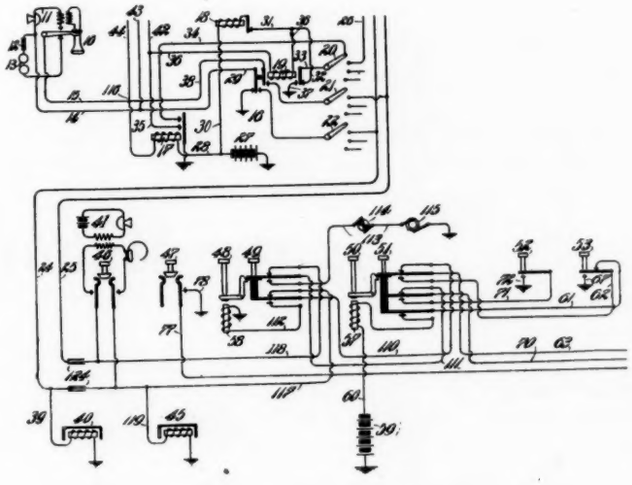
H. S. Janes, Hannibal, Mo., patent 916,710, March 30, 1909.

This invention contemplates a punched plate, which has backwardly projecting tubular members designed to enter a jack, when the line connected to it is out of service for various reasons. The punched plate has provisions on its face to accommodate cards on which informatino regarding the line can be written or printed.

TELEPHONE EXCHANGE SYSTEM.

Edmund Land, Grand Rapids, Mich., patent reissue 12,943, April 20, 1909, assigned to Milo G. Kellogg, Chicago.

A semi-automatic telephone system is here disclosed, and provides means, whereby the subscriber at the station 10, in taking off his receiver, actuates a primary or first selector of a switch arrangement 16, which connects the subscriber

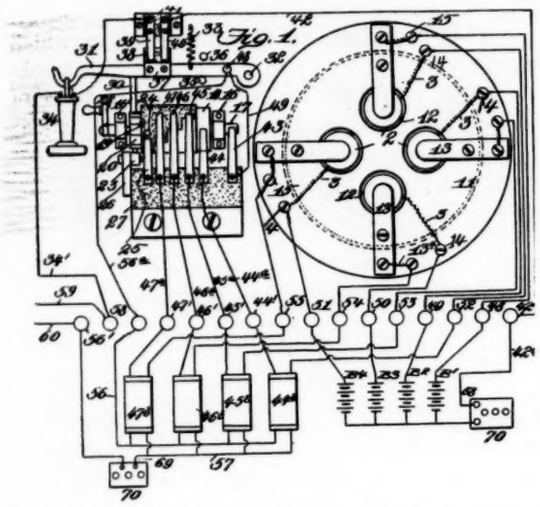


to an unbusy operator and trunk, and thereafter operates the signal 40, thereby to notify the operator that a connection is desired. By means of automatic switch mechanism shown in diagram at 48, 49, 50 and 51, which may take the form of an ordinary hand dial, a connection is established by the operator with any subscriber's line as desired.

TRANSMITTER APPARATUS.

C. Adams-Randall, New York, patent 919,113, April 20, 1909.

The transmitter here shown is designed for use both on local service and long distance service, and to this end, the transmitter 11 has several carbon-carrying cups 22, which are separately connected with batteries B^1, B^2, B^3 and B^4, and



their associated induction coils 44^b, etc. These various separate and independent transmitter circuits are connected to the arms of a draw bar. The anchor is placed in the the associated mechanism, and one transmitter after another can be thrown into circuit, as required, to make the conversation satsifactory, by means of the handle 22. Thus, for local service, one button may be needed, and for long distance service, two, three or four.

EARTH ANCHOR.

F. B. Miller, Norwalk, Ohio, patent 915,784, March 23, 1909.

This improved earth anchor consists of two blades hinged to the arms of a draw bar. The anchor is placed in the hole, and pressure exerted against the draw bar until the wings or blades enter the earth, so that both are in a horizontal position at right angles to the draw bar. The anchor cannot be readily withdrawn, as the blades cannot again assume the folded position unless pressure is exerted at their center or pivoted point.

DRY BATTERY.

Claude D. Enochs, Minneapolis, Minn., patent 917,272 April 6, 1909.

The dry battery of this invention is designed, in connection with the ordinary paper covering, to provide a tar or similar waterproof material as a covering for the interior sides and bottom of the covering. The dry cell is set in this receptacle, to which it adheres. The top of the cell, then, is covered with a tar compound, which amalgamates with the interior covering of the paper shell, thus making a waterproof dry cell.

PANEL CONSTRUCTION AND SWITCHBOARDS.

Amos F. Dixon, New York, patent 918,513, April 20, 1909, Assigned to Western Electric Co.

This invention covers the arrangement of selectors ordinarily used in automatic or semi-automatic telephone exchange system, in which the individual operating mechanisms are driven from a common source of power. It is further designed to simplify the wiring necessary. The terminal board is built in sections or units, which are mounted on a vertical post and springs, in sets of three, are arranged in multiple for the different lines or trunks. Selecting devices, having springs to engage the springs, mentioned above, are mounted on a movable carrier, which is moved by a shaft or rod. The shafts are all movable through the agency of a common source of power mounted on top of the mechanism.

INTERCOMMUNICATING TRUNKING SYSTEM.

Elmer R. Corwin, Chicago, patent 918,960, April 20, 1909, Assigned to Corwin Tel. Mfg. Co., Chicago.

The intercommunicating system described by this patent contemplates a single source of operating current and has buttons for signaling any desired station when they are pressed to their limiting operating position. At one station, a trunk line is provided, connecting to a magneto exchange, and is provided with a kick coil; so that, in the ordinary form of signaling, by connecting the local battery of the line to the kick coil, an impulse is sent to operate a drop at the central station. A repeating coil is interposed between the intercommunicating system and the magneto exchange.

TELEPHONE SYSTEM.

Charles F. Bradburn, Delmar, Ont., Can., patent 918,955, April 20, 1909.

This invention relates to step-by-step signaling apparatus, and provides means for operating a primary pointer which travels over a circuit-closing dial provided with contacts, and having buttons corresponding with various stations adapted for association with each contact, when a predetermined station is to be called. When these buttons are set, the pointer, in its revolution, is designed to stop. The pointer is actuated by means of gears and a balance wheel of the ordinary clock mechanism.

In the Manufacturing Field

Recent Cook Orders.

The following orders have been received by Frank B. Cook, Chicago, Ill., during the past few weeks and show a marked increase over former orders for the same length of time.

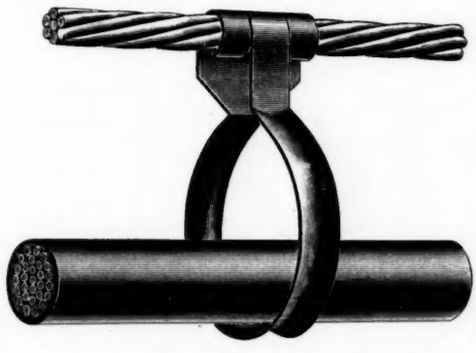
Cleveland, Ohio, 6 terminal; St. Louis, Mo., 7 junction boxes and terminal; Rogersville, Tenn., 10 terminal; South Hill, Va., 5 junction boxes and terminal; Lincoln, Neb., 46 terminal; Alliance, Neb., 300 pair frame and No. 10 protectors, 8 terminal; Mankato, Minn., 6 junction boxes and terminal; Kerrville, Tex., 300 pair frame and No. 10 protectors; York, Neb., 100 pair No. 10 protectors; Morocco, Ind., 5 junction boxes and terminal; Conneaut, Ohio, 100 pair frame; Aberdeen, S. D., 100 pair frame and No. 8-1; Carrollton, Ill., 4 terminal; Oil City, Pa., 24 terminal, 44 terminal; Tremont, Ill., 3 junction boxes and terminal; Lexington, Ky., 10 terminal; Portland, Ore., 1,500 pair frame and No. 8-1 protectors, 400 pair frame and No. 8-1 protectors, 200 pairs No. 8-1 protectors; Morenci, Ariz., 3 junction boxes and terminal; Dallas, Tex., 6 terminal; Kansas City, Mo., 140 pair No. 44 protectors, addition; Lexington, Ky., 2,940 pair No. 10 protectors; Webster City, Iowa, 6 terminal; Decatur, Ill., 150 pair frame and 460 pairs No. 10 protectors; San Francisco, Cal., 150 terminal; Culbertson, Mont., 100 pair frame and No. 10 protectors; Oakland, Cal.,

25 terminal; Atkinson, Neb., 3 terminal; Butte, Mont., 100 pair frame and No. 10 protectors, addition; Georgetown, S. C., 13 junction boxes and terminal; Emmetsburg, Iowa, 500 pair frame and No. 10 protectors; Savanna, Ill., 42 junction boxes and terminal; Webb City, Mo., 980 pair frame and No. 10 protectors; Clyde, Ohio, 13 terminal; Louisville, Ky., 1,260 pair frame and No. 10 protectors; Wellsville, Kans., 210 pair No. 10 protectors; Ness City, Kans., 3 junction boxes and terminal; Kentland, Ind., 6 junction boxes and terminal; Hamilton, Neb., 6 junction boxes and terminal; Hastings, Minn., 7 terminal; Columbia, Ohio, 4 terminal; Hastings, Neb., 100 pair frame and No. 8 protectors; Plattsmouth, Neb., 61 junction boxes and terminal; Dunkirk, N. Y., 3 junction boxes and terminal; Plattsmouth, Neb., 100 pair frame; Lincoln, Neb., 25 terminal; Wellsville, Kans., 300 pair frame; Guide Rock, Neb., 3 junction boxes and terminal; Joplin, Mo., 16 terminal; Cedar Rapids, Iowa, 50 terminal; Princeton, Ill., 6 junction boxes and terminal; Exira, Iowa, 400 pair frame and protectors; Wallace, Idaho, 39 terminal; Jefferson, Mo., 7 terminal; Chester, Ill., 3 junction boxes and terminal; Simcoe, Ont., Can., 6 terminal; Goodland, Ind., 4 junction boxes and terminal; Edmonton, Can., 300 pair frame; Clinton, Iowa, 100 pair frame; Columbia, Pa., 3 terminal; Redfield, S. D., 100 pair frame; Ord, Neb., 120 No. 8 protectors; Sissiton, S. D., 9 junction boxes and terminal; Tamora, Neb., 3 terminal; Germantown, Neb., 4 terminal; Des Moines, Iowa, 20 terminal; Boonville, Mo., 800 pair frame and No. 10 protectors; McCune, Kans., 4 terminal; Thomaston, Ga., 3 terminal; Mt. Vernon, Iowa, 400 pair frame and No. 10 protectors; Ashland, Wis., 7 terminal; Edmonton, Alta., Can., 1,200 pair frame; Norcatur, Kans., 3 junction boxes and terminal; La Crosse, Wis., 5 terminal; Excelsior Springs, Mo., 40 pair frame and No. 10 protectors.

A New Aerial Construction Ring.

A new type of aerial ring has recently been put on the market by the Yonkers Specialty Company, of Yonkers, N. Y., the well known manufacturers of metallic cable hangers of all descriptions, and of telephone specialties. It is a modification of their "type A" aerial ring which has been used largely for aerial cables and service wire work. The new "Type B" ring is not especially adapted for aerial wires, although it may be used for this purpose, if required. Type B is much stronger than the open type of ring and for this reason is better adapted for aerial cable work. Furthermore it can be clamped so securely on the supporting strand that it will not slip while aerial cable is being installed.

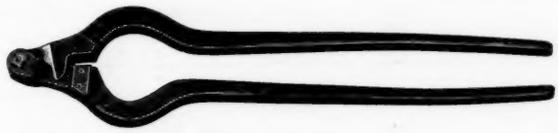
The great argument for the use of aerial rings for cable



The New Aerial Construction Ring

work is, that they afford a cheap and uniform method of running out cables. The rings are clamped securely on the support wires by a lineman working from a cable chair, by means of a special tool which clamps all three hooks in one operation.

At the same time that this work is done, a small pilot line is run through the rings, which in turn is used to pull through the regular running rope which is attached to the end of the cable. A team of horses can pull out a reel of cable as fast as they can walk. The cable gang required for this work should not consist of more than five or six men, and very little climbing is required. All cable blocks, tools and kindred ap-



Special Tool for Clamping the Aerial Rings.

pliances for installing cable may be abandoned if this method of erecting cable is adopted. The cost per foot for running cable can thus be reduced to a minimum, and the saving effected in this branch of construction work will pay for the difference in cost between aerial rings and the cheapest form of cable hanger, many times over. The work when completed is neat in appearance and very durable. If a replacement of a small cable by a larger one is required, the same rings will suffice for the work. If it is desired to also insert service wires in the rings, this can be done at small cost. These rings are about 2 inches in diameter, while the upper hooks are formed to fit any given size of support wire. A special tool is furnished for clamping the three hooks in one operation on a support wire of given diameter.

New Desk Set Units.

Some convenient combination boxes which reduce magneto desk sets to three units are described in a pamphlet, Bulletin No. 8, just issued by the Monarch Telephone Manufacturing Company, of Chicago. One of these combination boxes which is particularly convenient contains the batteries, besides the ringer and the connection rack. The advantages of having the batteries out of the way, yet in a convenient place are obvious to every telephone man. Another unit contains the ringer, the generator and connecting rack arranged in such a way that when the door of the box is opened, the ringer is entirely exposed and the connecting rack is in a position where it can be reached easily.

Superior Paper Fasteners.

The telephone manager and department head has many uses for paper fasteners, such as fastening together several sheets of letters, specifications, vouchers, statements, rental and toll bills, trouble tickets, etc.

Fasteners of various kinds have been placed on the market and have given more or less satisfaction. One of the most recent fasteners is known as the Superior. This fastener has two points which pierce the paper, binding it in such a manner as to keep it secure and straight. Interesting descriptive circulars have been prepared by its manufacturer, the W. M. Welch Company, Anamosa, Iowa.

PETTINGELL-ANDREWS COMPANY, Boston, Mass., has just issued a new fan catalog. It describes and illustrates four motors selected from the lines placed on the market by the leading manufacturers. The desk, bracket, ceiling and telephone booth fans for either alternating or direct current circuits are all represented.

MR. FRANK F. FOWLE, consulting telephone and electrical engineer, on May 1 removes his offices, in the Marquette Bldg., Chicago, from room 736 to room 937, on the 9th floor of the same building.

AMERICAN BATTERY COMPANY, after May 1, will occupy the entire building at 312-314 Fulton street, Chicago, Ill.

Condensed News Reports

Officers of companies are earnestly requested to forward us promptly all financial and other statements as soon as issued and any items of interest as to their plants and systems

PERSONAL.

MR. C. E. McCARN has been advanced from the position of assistant chief engineer to that of chief engineer of the Colorado Telephone Company at Denver.

MR. J. P. GORDON has been elected secretary of the newly organized Alameda Rural Telephone Company, with headquarters at Alameda, Saskatchewan, Canada.

MR. JAMES R. DODGE, of Ottawa, Ill., has been appointed manager of the Central Union Telephone Company's exchange at Mendota, Ill., to take the place of Mr. Wm. Kilmartin, who has resigned on account of poor health.

MR. H. A. RHODES has resigned his position as chief engineer of the Colorado Telephone Company to become chief engineer of the Universal Motor Company, of Denver. Mr. Rhodes has been recognized as one of the most competent engineers among telephone men, and his friends express their regret at his leaving the field, at the same time they extend good wishes for success in the new position.

NEW COMPANIES.

MONTGOMERY, ALA.—Artic' s of incorporation have been filed by the Montgomery & Crenshaw County Telephone Company. The object is to maintain a telephone system throughout the state of Alabama and principally in Montgomery and Crenshaw counties.

BAKERSFIELD, CAL.—The Farmers' Mutual Telephone Company has been incorporated to take charge of several rural lines south of this place. The company is capitalized at $4,000, and W. W. Frazier, R. S. Ashe, D. Hirshfield, Milo G. McKee and James Herod are the incorporators.

GAINESVILLE, GA.—The War Hill Telephone Company has been incorporated by T. J. Brice, J. S. Clark, J. C. Cox and others.

STONE CHURCH, ILL.—The Northwestern Telephone Association has been incorporated by H. B. Doeschen, Louis Lammers and Victor Grattendick with a capital stock of $840.

HOLLAND, IND.—"Party Line No. 30," connected to the Holland exchange, has filed articles of corporation. Henry Wellemeyer, Fred Kuck, C. Ring and Fred Satkamp are the directors.

MOORES HILL, IND.—A new company, to be known as the Moores Hill Telephone Company, has been incorporated with a capital stock of $150. The directors are M. C. Hulford, M. E. Bigney, S. J. Houston, John F. Given and George W. Canfield.

IOWA FALLS, IA.—A farmers' telephone company, to be known as the Rural Home Telephone Company, has been organized. Albert Brightwell is president and Fred Havens, secretary.

LANSING, MICH.—The Barryton Rural Telephone Company has been incorporated with a capital stock of $1,000.

MENAHGA, MINN.—The Menahga Telephone Company has been incorporated with Mr. Boekers as president, and A. O. Richardson as secretary. The company will construct lines running from Menahga into Green Valley, Spruce Grove, Paddock and Runsberg townships.

KALISPELL, MONT.—B. Fox and others organized and incorporated the Flathead Telephone Company. The company is capitalized at $15,000.

THREE FORKS, MONT.—J. J. Russell and others have filed articles of incorporation for the Three Forks Telephone Company. The company is capitalized at $2,500.

RED CREEK,, N. Y.—The Hawley Telephone Company has been incorporated with a capital stock of $500. The directors are Willis R. Younglobe, Wiliam Hawley, Frank L. Mixer, Eugene A. Ford and Walter Mack.

DANVILLE, N. C.—A new company, to be known as the Providence Telephone Company, R. F. D. No. 5, has been organized with a capital stock of $5,000.

HIGH POINT, N. C.—A charter has been granted the Prospect Telephone Company. The capital stock is $720 and the incorporators are R. E. Mendenhall, J. B. Sink, J. L. Newton and others.

CLYDE, N. D.—With J. H. Morgan, Gordon Brotherston and others of this place as incorporators, the Clyde Mutual Telephone Company has been incorporated. Its capitalization is $26,000.

MAX, N. D.—The Pleasant Valley Farmers' Telephone Company has been incorporated with a capital stock of $50,000 by Peter D. Podhola, E. C. Jones and others of this place.

PINKSTON, OKLA.—The Pinkston Telephone Company was organized recently and P. C. McKenny was chosen president; A. L. Squire, vice-president; O. V. Holloway, secretary; Joseph Householder, treasurer, and J. D. Householder, H. Eaton and J. W. Stough, directors. The capital of the company is $2,500.

HALLAM, PA.—A new telephone company has been organized in this place, to be known as the Hallam Rural Telephone Company. The officers of the company are: President, F. R. Storer; vice-president, C. Shultzbach; secretary, L. A. Crumbling; treasurer, E. M. Strickler.

LEESBURG, PA.—The Leesburg Rural Telephone Company has been organized. It will connect with the American Union exchange in Shippensburg. The officers are: President, H. J. Brinkerhoff; vice-president, Charles Clever; secretary and treasurer, Charles P. Baker.

BENTONVILLE, VA.—The Warren County Farmers' Mutual Telephone Company has been incorporated to build a telephone system. R. T. Morrisonville, president; R. A. Tristoe, secretary; L. H. Tristoe, all of Bentonville, are the incorporators. The capital stock is placed at $5,000.

GRUNDY, VA.—The Grundy-Raven Telephone Company has been incorporated with a capital stock of $4,000. W. L. Dennis, Grundy, is president; R. E. Williams, secretary-treasurer, Grundy; J. N. Stinnson, W. L. Ownbey, and W. L. Dennis, Grundy; George R. McCall, Raven, and M. B. Ratiff, Shack Mills, directors.

GRUNDY, VA.—With S. R. Hurley, president; E. E. Smith, secretary and treasurer, and H. W. Compton, E. R. Boyd and J. H. Stinson, directors, the Slate Telephone Company has been incorporated here with a capital stock of $1,500. A telephone line will be built from Grundy to Blackey, a distance of 15 miles.

PRESCOTT, WASH.—The Prescott Telephone Company has completed its organization. The work of wiring and constructing will be started as soon as a franchise is secured. It is the purpose of the company to join the Colville Spring and Touchet Valley lines at the edge of the town. The directors are J. Utter, W. W. Winkle, C. H. O'Neil, L. Burnam and J. D. Walters. Mr. Utter is president and Mr. Winkle, secretary-treasurer.

ALLIANCE, W. VA.—The Wallace Telephone Company has been incorporated with an authorized capital of $5,000. D. C. Bennett, Omar E. Hildreth, W. E. Bennett and G. W. Shrader, of Wallace, and S. H. Moore, of Mannington, are the incorporators.

APPLETON, WIS.—The Askeaton Telephone Company has been organized to build a rural line about eight miles long. It will connect at Wrightstown with the Fox River Valley Telephone Company.

BERGEN, WIS.—A new company, to be known as the Bergen Telephone Company, has been organized by H. S. Anderson, Charles Furst and A. G. Knutson. The capital stock is $5,000. The company is formed to operate a telephone system in the town of Clinton, with headquarters at Bergen.

ELEVA, WIS.—The Eleva Farmers' Telephone Company has been incorporated with a capital stock of $8,000. J. A. Nelson and others are the incorporators.

KAUKAUNA, WIS.—The South Greenville Farmers' Telephone Company has just been organized with officers as follows: President, Louis Pringle; secretary, J. H. Schneider, and treasurer, A. G. Mass.

KEWAUNEE, WIS.—R. C. Glandt and five others have incorporated the Kewaunee Telephone Company with a capital stock of $710.

STURGEON BAY, WIS.—The Nasewaupee Telephone Company has been organized with a capital of $1,000, and the incorporators are Oscar Haines, Philip Hembel and G. W. Wesiner.

TAYLOR, WIS.—John Lambert and others have incorporated a telephone company to be known as the Springfield Farmers' Telephone Company. The capital stock of the new concern is placed at $6,000.

ROSEWOOD, MAN., CAN.—The Rosewood Rural Telephone Company has been organized with T. F. Morris, president; William Norman, vice-president; Charles Claydon, treasurer and manager; W. C. Morris, secretary, and G. Swanson, C. Guppy, W. Skillen and B. Fraleigh as trustees.

CARP, ONT., CAN.—The Monk Rural Telephone Company has been organized at this place to operate in a dozen towns and villages. A metallic line using about 120 miles of wire will be constructed.

ELK LAKE, NIPISSING DIST., ONT., CAN.—The Silver Belt Telephone Company has been organized with a capital stock of $40,000.

HEWARD, SASK., CAN.—Mr. John Stuart is interested in the new telephone company being organized at this place, called the Heward Rural Telephone Company.

PILOT BUTTE, SASK., CAN.—The American-Canadian Rural Telephone Company was recently organized.

REGINA, SASK, CAN.—The North Regina Rural Telephone Company with headquarters at this place, has been incorporated to build a rural system in the section north of this city. The capitalization is $15,000.

WILMER, SASK., CAN.—A rural telephone company, to be known as the Wilmer Rural Telephone Company has been organized here. T. M. Leggat is president, Sanford McNeil, vice-president, and Thomas Larkin, secretary and treasurer.

FINANCIAL.

CLAYTON, ILL.—The Clayton Farmers' Telephone Company has increased its capital stock from $1,000 to $2,500. C. H. Smith is secretary of the company.

CLAYTON, ILL.—The stockholders of the Farmers' Telephone Company have filed notice of an increase in capital stock from $1,000 to $2,500.

MARTINTOWN, ILL.—The Local Telephone Company has increased its capital stock from $10,000 to $60,000, and has likewise moved its principal offices to Chicago.

SOUTH BEND, IND.—At the directors' meeting of the South Bend Home Telephone Company, held recently, payment of the semi-annual dividend of 3½ per cent on preferred stock was ordered.

GLASGOW, KY.—The Glasgow Home Telephone Company has increased its capital stock from $10,000 to $25,000.

PINEVILLE, KY.—At a recent meeting of the stockholders of the New Pineville Telephone Company, the capital stock was increased from $3,600 to $20,000.

ALBANY, N. Y.—The regular quarterly dividend of 1 per cent has been declared by the Albany Home Telephone Company.

NEW YORK CITY, N. Y.—At a special meeting of the Great Eastern Telephone Company, the capital stock was raised from $1,000,000 to $50,000,000.

CLEVELAND, OHIO.—The directors of the Cuyahoga Telephone Company met recently and authorized the sale of $300,000 time collateral notes to McLoud & Pulliam and Otis & Hough. The proceeds will be used to pay off the entire floating debt of the company and to build a new telephone exchange on E. Eighty-first street.

VALLEY SPRINGS, S. D.—At the annual meeting of the Valley Springs Telephone Company the directors declared an 8 per cent dividend.

REARDAN, WASH.—The West Crescent Telephone Company will increase its capital stock to $5,000.

FRANCHISES.

ALTOONA, IA.—The Rural and 4-City Telephone Company was recently granted a franchise to erect and maintain a telephone system in this place. An all-cable system will be installed, and the rural telephones will be equipped with a lockout system. O. A. Repass, of Dallas Center, and R. L. Parker, of Prairie City, are in charge of the work on the new system.

KINSLEY, KAN.—The Kinsley Automatic Telephone Company has been granted a franchise for 21 years to operate, extend and maintain a telephone system in this city.

TRACY, MINN.—At the recent meeting the common council granted to the Tri-State Telephone & Telegraph Company, a franchise to maintain telephone lines in the streets and alleys which are to be used for long distance purposes only. At any time the company is petitioned by 150 people of the town, it agrees to install and maintain a local exchange, with a common battery system.

PLATT CITY, MO.—The Farmers' Telephone Company of Platt County has been granted a franchise to maintain a telephone system.

CARRINGTON, N. DAK.—The Hawks Nest Telephone Company has been granted a franchise to construct and maintain a telephone system in Township 145.

SPOKANE, WASH.—The Board of Commissioners has granted a twenty-five year franchise to the Farmers Telephone Company to construct and maintain a telephone line along the highway between Moab and Newman Lake.

CONSTRUCTION.

TOMBSTONE, ARIZ.—The Tombstone Telephone Company has strung an additional wire from this city to Gleeson and Courtland, thus replacing the former ground circuit with a metallic circuit.

CAROLAN, ARK.—A telephone system is being built from Carolan to Booneville. Mr. John W. Carolan is interested in promoting the connection.

VILLANOW, GA.—M. Gordon Keown, popularly known as "The Rural Telephone Man," president of the Armuchee Telephone Company, is going hot after the rural telephone business this year. He promises to install more rural telephones than any other man in his state. He will begin the construction of 25 miles of new line in a few days.

SAN DIEGO, CAL.—The Home Telephone Company expects to expend in the neighborhood of a quarter of a million dollars in making extensions and improvements to its lines and system. It is reported that extensions will be made in the direction of La Jolla, Coronado, University Heights, Chula Vista and National City. Another extension which will probably be built is a line to Tia Juana, Mexico.

MOSCOW, IDAHO.—It is reported that T. A. Meeker of the local telephone system at this place will spend about $10,000 in improvements to the system.

HARMON, ILL.—The Green River Telephone Company anticipates running a line from Amboy to Harmon and also to connect with Walton. It also expects to put in a metallic circuit between Harmon and Walnut.

ROSEVILLE, ILL.—The Roseville Telephone Company, of which Mr. Walter Waugh is manager, is in a very flourishing condition. The present switchboard capacity has been entirely outgrown, and as the subscribers' list is still growing rapidly, the company will install a new and modern switchboard of sufficient capacity to take care of all demands for service. Other improvements will also be made to the exchange.

PRINCETON, IND.—The Princeton Independent Telephone Company contemplates running a line from Princeton to Owensville.

VALPARAISO, IND.—The Valparaiso Telephone Company has put into service a new piece of cable construction between its office and College Hill. It is reported that the company intends building a new exchange building, and when this is done a common battery system will be installed.

BOONE, IOWA.—On account of increased business, the Boone County Telephone Company has found it necessary to install an addition to its switchboard.

BLUE RAPIDS, KAN.—The Blue Rapids Telephone Company is preparing to install a new switchboard in its exchange. The new board will be equipped with 600 drops to have an ultimate capacity of 1,000 lines.

GENESEO, KAN.—The board of directors of the Geneseo Telephone Company authorized the installation of a new switchboard.

HALLOCK, MINN.—The Kittson Telephone Company has installed a new switchboard having a capacity of 300 lines in its exchange at this place. The new board complete with cable, cost about $1,200.

MESABA, MINN.—The Mesaba Telephone Company is installing a new switchboard in its exchange at Coleraine, made necessary by the rapid increase in subscribers. Lines are also being strung for exchange purposes to Taconite, and additional lines to Gilbert will soon be strung.

GRANT CITY, MO.—The Grant City Mutual Telephone Company has just installed a new switchboard in its exchange. This gives the exchange a capacity of 300 lines.

SCOTTSBURG, NEB.—The Platte Valley Telephone Company will soon build a one-story brick exchange building.

WINNEMUCCA, NEV.—The Utah, Idaho and Nevada Telephone Company has commenced the construction of a telephone and telegraph line from Winnemucca to National and Fort McDermott. It will connect all of the mining camps of northern Humboldt county.

KING, N. C.—The Quickstep Telephone Company contemplates building telephone lines from King to Danbury, Rural Hall and Donaha.

PORTLAND, ORE.—The Home Telephone & Telegraph Company will expend about $400,000 in improvements and extensions to its lines. The conduit system is being extended, and men are at work covering the Albina district with poles and an aerial cable system will be installed in that part of the city.

CALIFORNIA, PA.—The long distance system of the Air Line Telephone Company, connecting Charleroi with Washington, was put into service recently. The company handles no local business, but gives a toll service between the county seat and the Independent system of California, Roscoe, Home Mutual, Maple Creek and Charleroi.

DALLASTOWN, PA.—The York Telephone Company of York will extend its telephone service from Dallastown to Winterstown via Arbor, and the parties residing on the contemplated route are much pleased with the prospects.

OGDEN, UTAH.—J. H. Sheldon, superintendent of telegraph of the Union Pacific, is arranging to install two additional telephone circuits between Ogden, Evanston and Green River.

HUSUM, WASH.—The Underwood Norway Telephone Company is making preparations to extend its lines into the Little White Salmon Valley.

NEWPORT, WASH.—The Newport Telephone Company has started the construction of a line in the Pend d'Oreille River Valley.

WENATCHEE, WASH.—The Farmers' Telephone & Telegraph Company has appropriated about $15,000 to be expended in making improvements to its lines.

RICE LAKE, WIS.—Many extensions will be made this spring by the Rice Lake and Northwestern Telephone Company and the Barron County Telephone Company.

SHEBOYGAN, WIS.—Indications in this district are that from 600 to 800 telephones installed throughout Sheboygan and Manitowoc counties will be connected with the Citizens' Telephone Company's exchange within the coming year as a number of rural companies will build connecting lines.

SHEBOYGAN FALLS, WIS.—The Sheboygan Falls Rural Telephone Company is installing about 100 additional telephones. A new switchboard has been installed by the Citizens' Telephone Company to take care of this increase.

DALLAS, WIS.—The Dallas Farmers' Telephone Company held a meeting recently and the directors authorized the purchase of a new 100 drop switchboard. The company is in a good financial condition.

CRANBROOK, B. C., CAN.—Preparations are being made by the Cranbrook Telephone Company for the construction of a line to Port Hill, Wash., in order to secure connections with Spokane.

EDMONTON, ALTA., CAN.—Telephone construction throughout the province of Alberta will be very extensive this year. About 800 miles of new line will be built, although the demands are for a great deal more. Nearly 500 extensions have been approved at the present time. Rebuilding of exchanges at Wetaskawin, Olds, Medicine Hat and Lacombe was a feature of the work done through the winter and work is still progressing at Raymond and Magrath. At Lethbridge, an entirely new exchange was constructed. The greater portion of the extension will be done in rural districts, among them being lines from Edmonton to Cooking Lake, Curlew to Trochu valley, eastward from Calgary to Gleichen and a toll line from Medicine Hat to Taber. Another toll line will be built from Calgary to Macleor and from Edmonton to Fort Saskatchewan. A very important extension will be the lines from Blairmore to the Kootenay lines in British Columbia, thereby giving the people connection with Seattle, Vancouver and other Pacific Coast points.

HAMILTON, ONT., CAN.—The Niagara Power Commission is making arrangements for the construction of a telephone line from here to Guelph, Cnt. T. R. Allison is in charge of the work.

NELSON, B. C., CAN.—Permission has been obtained from the Great Northern Railway for use of its telephone poles and it is proposed to build a line from here to Salmo.

TILBURY, ONT., CAN.—Supplies have been ordered by the Tilbury Telephone Company and construction will commence very soon.

TILSONBURG, ONT., CAN.—The directors of the Tilbury Telephone Company have authorized the immediate purchase of the necessary supplies for the proposed telephone system, so as to have 35 miles of line in operation by July.

WINNIPEG, MAN., CAN.—The Manitoba government will spend about $800,000 on improving and extending its telephone system. About $450,000 will be spent on material and the work to be undertaken is about as follows: Underground and aerial work in Winnipeg, $160,000; two new exchanges and switchboards in Winnipeg, $110,000; rural and farmers' lines, $270,000; alterations and additions to exchanges, $104,000; extensions to long distance lines, $156,000. The work will be done by day laborers, but tenders will be called for the various supplies from time to time as required.

CONDIE, SASK., CAN.—Arrangements are being completed by the Condie Rural Telephone Company for the immediate construction of a rural telephone system. N. Henderson is secretary of the company.

ELECTIONS.

PRAIRIE CITY, ILL.—At a meeting of the Acme Telephone Company held recently the following officers were elected: President, A. L. Jared; secretary, James Leard, and treasurer, J. W. Wilson.

RANDALL, IA.—Stockholders of the Randall Telephone Company met and elected officers as follows: H. B. Hanson, president; O. B. Olson, vice-president; U. S. Olsen, secretary, and C. J. Christianson, treasurer.

LOWELL, KAN.—Officers elected for the ensuing year by the Lowell Telephone Company are: President, J. C. Hobson, and secretary-treasurer, F. B. Simmons.

PLEASANT DALE, KAN.—The directors of the Eagle Valley Telephone Company met recently and elected officers as follows: President, G. W. Weiser; vice-president, John Pinn; secretary, S. F. Pearson, and treasurer, F. L. Jones.

AUSTIN, MINN.—The Corning Co-operative Telephone Company, recently organized, has elected Olaf Christianson, Sanford Christianson, Nels Listegard and Chris Christianson as directors.

PRESTON, MINN.—Officers for the Wykoff and Root River Telephone Company have been elected as follows: President, Joseph C. Drury; secretary, John Galdy, an dtreasurer, E. Dunn.

HEBRON, NEB.—The Thayer County Telephone Company of this place on April 1 paid an annual dividend of 6 per cent on its preferred stock. The officers elected at the last meeting are as follows: A. G. Collins, president; B. F. Roberts, vice-president; C. L. Richards, secretary-treasurer; W. C. Cooper, general manager; J. K. Perry, director. From a financial as well as a service standpoint the Thayer County Telephone Company has made a fine showing in the last year, largely due to the efficient work of its manager, Mr. W. C. Cooper.

PENN YAN, N. Y.—At the annual meeting of the directors of the Benton Telephone Company, the following officers were elected to serve throughout the coming year: President, J. K. Turner; vice-president, Henry C. Earl; secretary-treasurer, I. W. Comstock. These, with Garfield Turner, Walter Lebbon, Edward Hurrin and Charles Legg, constitute the board of directors.

ATWATER, OHIO.—At a recent meeting of the stockholders of the Atwater Telephone Company, H. L. Beatty was elected president; Perry Robinson, vice-president, and W. F. Craig, secretary-treasurer. H. S. Wilson and Perry Robinson,, of Diamond; H. L. Beatty, of Ravenna; W. E. Craig, of Milton, and S. W. Wilson, of Atwater, are the directors.

BELLEVUE, OHIO.—The stockholders of the Bellevue Home Telephone Company met and re-elected its old board of directors. The officers were also re-elected, as follows: President and general manager, F. A. Knapp; vice-president, B. F. Bell; secretary, Ralf Wolfrom; treasurer, H. C. Stahl. The above named with C. W. Bell, Dwight E. Sapp and F. L. Beam constitute the board of directors.

BLOOMINGDALE, OHIO.—The Bloomingdale Telephone Association met recently and elected officers as follows: President, J. Blaine Simeral; vice-president, E. L. Reed; secretary, Howard D. Blackburn; treasurer, C. A. Moore; general manager, Jacob Porter.

LANCASTER, OHIO.—Officers elected for the Buckeye Lake Home Telephone Company are: C. M. Wagner, Baltimore, president; George Haver, Thurston, secretary; M. C. Soliday, Thurston, treasurer, and D. L. Mauger, Thurston, general manager. The other directors are William Kemp, L. H. Soliday, G. W. Reincheld, of Thurston; Daniel Wagner and D. W. Alt, of Baltimore, and Clarence Lamb, of Pleasantville.

PERRY, OHIO.—The stockholders of the Perry Telephone Company met recently and elected the following directors for a term of three years. J. H. Brown, A. N. Champion, D. R. Holcomb and H. J. Wright. W. W. Cook was elected president; T. B. West, vice-president; Charles L. Lucas, secretary, and E. M. Orcutt, treasurer. W. W. Cook is manager.

BEDFORD, PA.—Directors of the Bedford-Fulton Telephone Company met recently and elected officers for the ensuing year, as follows: Dr. H. J. Bender, president; Joseph F. Biddle, vice-president, and John S. Hershberger, secretary.

CAMERON, PA.—The directors of the Farmers' Telephone Company have elected officers for the ensuing year as follows: J. C. Lough, president; Charles Todd, secretary; Barney Wiley, treasurer.

VOLGA, S. D.—At the meeting of the Sinai Telephone Company, held recently, the following officers were re-elected: President, Hogan Hoganson; vice-president, Henry B. Nelson; secretary, H. C. Halvorson; treasurer, L. E. Johnson; auditor, Carl Hoff.

DALLAS, WIS.—The Dallas Farmers' Telephone Company had its annual meeting recently and F. F. Tibbits was elected president; L. E. Joppa, secretary, and J. N. Anderson, treasurer.

MISCELLANEOUS.

OGLETHORPE, GA.—The Macon County Telephone Company has been purchased from R. E. Gassett by C. W. & W. F. Pickard. The new owners have put the exchange in charge of Mr. Eason, of Ellaville, as manager.

LA FAYETTE, IND.—At the fifth annual convention of the Indiana Municipal League, to be held in this city June 22, 23 and 24, one of the principal features will be the discussion of telephone, electric light and water service franchises.

LA FONTAINE, IND.—The Independent Telephone Company's plant and building in which it was located was destroyed by fire recently.

RUSHVILLE, IND.—The Co-Operative Telephone Company is in a very excellent condition financially. It is reported that within the past eight years the monthly receipts have increased from $250 to $1,712. It is estimated that the company will have to expend about $10,000 this year to increase the capacity of the system sufficient to meet the demands.

CLINTON, IOWA.—The switchboard in the old exchange of the Tri-City Telephone Company at this place was totally destroyed by fire recently. It is estimated that the loss is about $10,000.

MAZEPPA, MINN.—Frank Marvin and John Grimm, of Zumbrota, have purchased the Mazeppa telephone exchange from J. W. Kingsley.

AUSTIN, TEX.—Senator Perkins introduced a bill in the legislature during the recent session, prohibiting swearing over the telephone, and the bill was finally passed.

NACOGDOCHES, TEX.—E. C. Branch, owner of the telephone exchange at this place, has sold the system to O. E. Hubbard and W. S. Beeson.

PARKERSBURG, W. VA.—The Rural Telephone Company expects to open up its exchange in this city very shortly.

BRANTFORD, ONT., CAN.—Operation of the system of the Canadian Automatic Telephone Company will begin May 1.

WINNIPEG, MAN., CAN.—According to reports from W. W. Ashald, superintendent of telegraphs and telephones for the Grand Trunk Railway, there is a strong probability of the telephone replacing the telegraph on the railroad system. He states that telephones have been very successfully tried on the Canadian Pacific R. R., and that they are not nearly so nerve trying as operating a telegraph.

UNDERGROUND.

CHESTER, S. C.—The Chester Telephone Company plans installing a complete underground system.

CORNING, IA.—The Corning Telephone Company has placed orders for material for an underground cable system. About 20,390 feet of cable was ordered. The improvements will cost in the neighborhood of $10,000.